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Flat Rates in Scotland

EXPERIMENTAL flat rates with a limited application as between London and certain districts in the East of England have been before now sanctioned by the Railway Rates Tribunal. This week, as the result of a joint application by the London & North Eastern and London Midland & Scottish Railway Companies, the tribunal on June 14 authorised a scheme of flat rates for all descriptions of merchandise in Classes 7 to 20 of the Railway Classification (except merchandise conveyed in owner's tank wagons and dangerous goods) tendered in lots of 4 tons and upwards at one time, as between Glasgow on the one hand and Aberdeen, Dundee, and Perth on the other. These rates apply experimentally from June 15, 1938, until June 30, 1939. In future it will not be necessary for traders desiring to send bulk consignments of goods between Glasgow and the three towns in question to pay any heed to the railway classification, but they will know, as in the case of road transport, that their cost is one fixed amount per ton, irrespective of whether their traffic consists solely of one kind of merchandise, or of mixed lots. Existing rates for low class traffics, which are less than the new figures, will remain unaltered. The new rates from and to Glasgow will be 12s. 3d. a ton with Aberdeen, 9s. 6d. with Dundee, and 7s. 9d. with Perth, with additions in each case where cartage is performed. As is well known, the road haulier has been increasingly taking traffics which are in the higher classes of the statutory railway classification because he bases his charge on the cost of providing the transport instead of upon a system of classification. With these new flat rates it is hoped to place the railway companies on a level comparative with their competitors.

* * * *

Railway Staff National Tribunal

We publish on page 1179 a Decision given by the independent Chairman of the Railway Staff National Tribunal upon a claim referred to him, personally, for determination. The particular issue itself is not of great importance, but the form of submission is of interest, being the first of its kind under the new Machinery of Negotiation which was agreed some three years ago. The parties to the issue—in this case, the Associated Society of Locomotive Engineers & Firemen and the four main-line railway companies—submitted a jointly-signed document stating specifically the issue in dispute, all the material facts of the case, and the authorities and arguments upon which the parties relied. Thus a formal hearing was avoided, although it happened that Sir Arthur Salter, the Chairman, found it necessary to consult representatives of the parties informally. The procedure of submitting an issue to the Chairman personally was adopted with the object of limiting the occasions upon which it would be necessary to convoke the full tribunal. Under the procedure which applied prior to the Agreement of February, 1935, the full National Wages Board, comprising seventeen persons, was called together from time to time to hear and decide issues, many of them of a minor nature and, in some cases, affecting only an individual. The new procedure has much to commend it.

* * * *

The Week's Traffics

Last week's traffic returns include the figures for the Sunday and Monday in Whitsun week on the L.N.E.R. and for the Monday on the three other main line railways, and compare with an ordinary week in 1937, so that passenger train receipts are up, and merchandise and coal earnings are down. Except on the Southern the goods train decreases have been far heavier than the passenger increases. Comparing the Whitsuntide holiday fortnight of 1938 with that of 1937 it will be found that passenger train traffics increased by £23,000 on the L.M.S.R. and by £24,000 on the L.N.E.R., but were £4,000 lower on the Great Western and £17,000 lower on the Southern. For all traffics the decreases shown in the complete 1938 Whitsuntide figures in comparison with those of 1937 were £54,000 on the L.M.S.R., £41,000 on the L.N.E.R., £7,000 on the Great Western, and £17,000 on the Southern.

	23rd Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	
	£	£	£	£	£	%
L.M.S.R.	+ 68,000	− 140,000	− 67,000	− 139,000	− 582,000	− 2·09
L.N.E.R.	+ 44,000	− 86,000	− 52,000	− 94,000	− 402,000	− 1·97
G.W.R.	+ 11,000	− 69,000	− 41,000	− 99,000	− 190,000	− 1·66
S.R.	+ 31,000	− 13,000	− 9,000	+ 9,000	− 73,000	− 0·83

Irish Whitsuntide passenger figures for 1938 in comparison with 1937 show a decrease of £181 on the Belfast & County Down, but increases of £1,050 and £2,304 respectively on the Great Northern and Great Southern.

* * * *

Railway Assessment in Northern Ireland

Assessment of railways in Northern Ireland is governed by the Railways (Valuation for Rating) Act, 1932. The Commissioner for Valuation appointed under this Act is required to ascertain the net receipts of a railway for the years 1931-35, average such net receipts, apportion them as between Northern and Southern Ireland in the

case of a cross-border railway, and thus arrive at its average net receipts for Northern Ireland. From such net receipts, less deductions for working expenses, tenant's capital, &c., is to be calculated the rent at which the railway hereditaments as a whole might reasonably be expected to let, such rent to be the net annual value. It is provided that where the net annual value works out at nil, there is to be a minimum valuation. In a considered judgment at the Belfast Recorder's Court on June 7, Judge Thompson, K.C., upheld the contention of the Great Northern Railway Company that its railway hereditaments should be valued on a " profits basis " following the House of Lords decision in the Southern Railway case and that the minimum valuation of £12,274 15s. on the Northern Ireland portion of the undertaking should come into force. The company thus successfully appealed against the Valuation Commissioner's figure of £28,020. The Recorder concluded that the valuation must be nil and that accordingly the minimum valuation came into force.

* * * *

Overseas Railway Traffics

For the 50 weeks of the current financial year the Entre Rios and Argentine North Eastern Railway Companies have obtained increases in sterling of £70,626 and £18,841 respectively, with corresponding increases in currency of 865,800 pesos and 102,800 pesos. The Buenos Ayres Great Southern has, during the past fortnight, reduced its aggregate decrease by £10,483, but the remaining three big companies have continued to show losses on a large scale. At this time a year ago the aggregate traffics of the Central Argentine and Buenos Ayres & Pacific showed increases of £1,814,767 and £575,208 respectively over those for the corresponding period of 1935-36.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific ..	50th	79,653	– 25,930	4,404,101	– 417,034
Buenos Ayres Great Southern ..	50th	127,047	+ 5,893	7,410,109	– 17,391
Buenos Ayres Western	50th	36,290	– 8,561	2,246,650	– 250,637
Central Argentine	50th	101,573	– 50,651	5,937,380	–1,736,217
Canadian Pacific	23rd	456,000	– 59,000	10,684,400	– 904,800
Bombay, Baroda & Central India	10th	253,575	– 12,825	1,951,725	– 44,100

The Central Uruguay Railway to date shows an increase of £26,809 in sterling but it is still $214,747 behind in currency.

* * * *

Great Western of Brazil Railway Co. Ltd.

Receipts in currency for the year 1937 were below those of the previous year chiefly because of less sugar and sugar cane traffic and of interruptions due to floods. An increase in the average rate for conversion, however, made the receipts in sterling higher by £8,872 or 2·06 per cent. Working expenses in sterling, at the same time, advanced by £69,029 or 18·74 per cent. To deal with the critical state of the rolling stock an increase of £44,000 or 63·28 per cent. in locomotive and rolling stock maintenance costs was required. Fuel costs were also affected by the increase of 20 per cent. in the use of Brazilian coal. The total deficit on the year's working was £106,074.

	1937	1936
Kilometres open	1,758	1,742
Passengers	3,163,203	3,194,306
Tons of goods	1,148,985	1,274,320
Ton-km., goods and livestock ..	105,905,090	106,102,979
Operating ratio, per cent. ..	99·27	85·32
	£	£
Passenger receipts	113,066	110,459
Goods receipts	295,476	290,180
Gross receipts	440,555	431,683
Working expenses	437,354	368,325
Net receipts	3,201	63,358

On May 8, 1937, the newly constructed line of 16 km. from Lagoa Comprida to Bom Jardin was incorporated into the system.

* * * *

Antofagasta Affairs

A daily paper had forecast " liveliness " at the annual meeting on Tuesday of the Antofagasta (Chili) & Bolivia Railway (reported on page 1184) in view of reported dissatisfaction with the directors' dividend policy. A large attendance promised excitement should battle be joined, but when the time came to show its colours proved predominantly in favour of the board. The opposition, harassed by a little sniping from the other side while stating its case, was not forced to a general engagement, and left the field with three votes in its favour against what the Chairman, Mr. A. W. Bolden, described as an " overwhelming majority." A single dissentient against the resolution adopting the report and accounts for 1937 was its only manifest effort at counter-attack. In our report of the meeting, we record the opposition proposal that reserves should be drawn upon to wipe out preference arrears and pay an ordinary dividend of one per cent. Events showed, however, that the board is fully supported in its present policy of conservative finance; this is in the real interest of the ordinary stockholder, for without it the company might have come under the control of a moratorium committee whose first and paramount duty would be to the debenture holders.

* * * *

The Northern Belle of the L.N.E.R.

Anyone wishing to see what is really a hotel on wheels should visit King's Cross station this evening or next Friday, June 24, and witness the departure of the L.N.E.R. Northern Belle cruise train at 7.50 p.m. Inaugurated in 1933, following a happy thought of Sir Ralph Wedgwood, this summer is its sixth season. The train accommodates 60 passengers who, at a charge of only £20 each, which works out at less than the third class fare for the mileage covered, receive first class accommodation on a week's tour of the most attractive districts of Scotland. Moreover the fare includes all meals and day excursions by modern motor coaches from those places where the train stops, such as Aberdeen, Ballater, Inverness, Blair Atholl, Crianlarich, and Edinburgh. Passengers also have the opportunity of visiting the Empire Exhibition at Glasgow without the difficulty of finding hotel accommodation.

* * * *

The Only British Cruise Train

The train journeys—by the Coast Line from Aberdeen to Inverness, then down along the former Highland Railway (by arrangement with the L.M.S.R.) to Blair Atholl, and, last but not least, up and down the West Highland line from Ardlui to Fort William and Mallaig—afford remarkable vistas of Scottish scenery. The train (as shown by the plan on page 1177) is comprised of 14 coaches and includes six sleeping cars (3 with shower baths), a luggage car, two restaurant cars, a day saloon, a car fitted with hairdresser's saloon, cocktail bar, and smoking rooms, &c., a kitchen car and two other cars for the day and night accommodation of the staff. A number of habitués regard the train cruise as an annual experience they would be most sorry to miss. Newcomers, who start on their first train cruise with perhaps a little trepidation at the prospect of spending a week in a train, return full of enthusiasm for a delightful experience and the organising ability of the L.N.E.R. officers responsible for the arrangements for the cruise and the great courtesy of the cruise train staff.

Swiss High-Speed Enterprise

Remarkable enterprise is being shown by the management of the Swiss Federal Railways in the use of its high-speed electric units. As distinct from the single-car *Flèches Rouges*, two five-car sets, hauled by locomotives, each day make the journey Zurich—Berne—Lausanne — Geneva — Lausanne — Neuchatel — Bienne — Basle — Zurich — Berne — Lausanne — Geneva, or *vice versa*, thus connecting up all the greatest centres of population in Switzerland daily on a total itinerary of 559 miles, covered in a running time, excluding stops, of about 10¾ hr. Thus to cover 3,354 miles each week at 52 m.p.h. in a country with the configuration of Switzerland is an astonishing achievement. A new streamlined three-car unit is now running daily in the morning from Rorschach. St. Gall, and Zurich to Berne, returning in the evening, and filling in its midday hours by running first from Berne to Bienne and back, and then from Berne to Basle and back, and so covering 457½ miles daily. The fourth set is reserved for party excursions, in some cases involving extensive tours of the country, and is bespoken practically every day in the summer season. Some handsome new two-car electric sets were also put into service in April by the Berne—Lötschberg—Simplon Company between Berne and Neuchatel, Interlaken and Zweisimmen, and Berne and Schwarzenburg; these are known as *Flèches Bleues*, to distinguish them from their red counterparts of the Swiss Federal Railways.

* * * *

A Special Feature of Indian Traffic

Few who have never visited India can realise the great volume of traffic created by the wholesale migration of the European and associated Indian population to " the hills " in order to avoid the hot weather in " the plains." Practically all the government services, civil and military, British troops, and many commercial men—in fact almost everyone except the unfortunate railwayman—and the entire families of virtually all Europeans and well-to-do Indians, seek respite from the intense heat by visiting some hill station for at any rate a part of the summer. Whole Governments move bodily to their particular mountain eeries in search of a climate that will not be prejudicial to health nor detract from the effieiency of the work of the individual. But in no other instance is there so great an annual migration as to the Simla hills in the spring, with its corresponding return " down hill rush " in the autumn. For not only do all the departments of the Government of India, including Army Headquarters, move up from Delhi to Simla, but the Punjab Government also spends the hot weather months in that mountain city. Troops, too, recoup during the summer months at the lesser stations in the Simla hills. Consequently there is a great concentration of traffic, not only from Delhi and Lahore, but from all over India upon Kalka, the broad-gauge terminus at the foot of those hills, whence the remarkable 2 ft. 6 in.-gauge Kalka-Simla line climbs to an altitude of about 8,000 ft. at Simla.

* * * *

Concentration of Traffic at Kalka

To give some idea of the traffic through Kalka, it may be mentioned that through broad-gauge expresses from Delhi, Calcutta, and Lahore terminate there, and through carriages are also run from Bombay, Karachi and other cities. Kalka itself is well above the level of the plains and is reached by a long 1 in 50 gradient, up which the heavier trains are sometimes pulled and pushed by as many as four locomotives. At Kalka the human freight from two or three successive trains—each composed of ten or a dozen coaches—arriving in the early morning at short intervals, turns out and after breakfast at the refreshment room, proceeds to the numerous narrow-gauge trains that follow one another up into the Himalayas proper. Kalka station is thus of great importance and the most recent alterations to it, described and illustrated elsewhere in this issue, are commensurate with its importance. Incidentally attention is directed to the very up-to-date form of roofing used, embodying a special all-welded triangular truss type of purlin, the strength of which permits of columns spaced at 50-ft. intervals, and gives a fine wide covered platform comparatively free of obstructions. Few stations in this country having umbrella type platform roofing can boast of such an advantage. The narrow-gauge platforms which are in continuation of the broad, and beyond the circulating area, are also mainly covered, so that as little inconvenience as possible is caused during " the rains," when there is much subsidiary traffic constantly flowing to and from the Simla hills. The decorative pictorial posters of the Publicity Department and the electric fans are features that may be noted in the illustrations accompanying the article.

* * * *

Anti-Telescoping Devices

Among the interesting features incorporated in the new British-built rolling stock for the Chinese National Railways, described on pages 1161-1166, not the least is the special strengthening at the ends of the vehicles to minimise, or even eliminate, the risk of telescoping in the event of collision. This anti-telescoping device is of such a design that it can be incorporated in wooden-bodied stock, and is indeed made compulsory by Government for all modern passenger vehicles in China, whether of all-steel or so-called semi-steel construction. The extra weight of the special strengthening frame amounts to only about two tons a coach, but this is of course additional to that other important contributory factor, the buckeye coupler and Pullman vestibule with which these new vehicles are equipped. The all-steel vestibule gangways are also worth noting for their obvious advantages, one of which is the elimination of inflammable material. The new vehicles are of large size, made possible by the ample Chinese loading gauge, and permitting the provision in the third class cars of lying-down accommodation for no fewer than 69 passengers.

* * * *

Navy Week

The British railway companies have closely co-operated with the naval authorities for several years in connection with Navy Week, which is held at Chatham, Portsmouth, and Plymouth. About 400,000 persons visit the dockyards during this period and the cheap fare facilities and special train arrangements made by the four group companies represent an important contribution to the success of the effort. This year Navy Week is to be held on July 30 and August 1 to 6 inclusive, and the railway companies are considerably extending their excursion and cheap fare arrangements. For the first time all four companies are issuing cheap day return tickets at the single fare to the three ports by any train and from any station not more than one hundred miles distant, except to Portsmouth and Chatham on the two Saturdays. Special train excursions have been arranged from the Midlands and north west at the instance of a number of provincial newspapers for their readers, and a number of day trips will be run on behalf of ex-service men's associations and large firms in the Midlands. For the general public also many special trips have been arranged.

XUM

The Conveyance of Strawberries

THE approach of summer in Great Britain is usually heralded by the appearance of strawberries in the shops, and many June functions would seem incomplete without this delectable fruit. The strawberry season is confined to what is often the hottest part of the year, beginning usually in May with the Hampshire crop and followed by that from Kent. These are succeeded in turn by heavy crops from the Essex and Cambridgeshire areas, where the growing season is slightly later and continues into July. As the heat which is essential for the ripening of this choice fruit before picking also hastens its subsequent deterioration, it will be realised that the most expeditious form of transport is required between the growing areas and the various markets. The railway companies have been closely associated with the development of the industry for many years and their various facilities have undoubtedly played an important part in the successful marketing of the fruit. The importance and size of the strawberry traffic cannot be estimated solely by its weight, because the bulk of the fruit is despatched in handled baskets or chips holding one or two pounds of fruit only. Seasonal conditions, of course, largely govern the extent of the crop, but last year, for instance, over five million packages were conveyed by rail from the various growing areas. A considerable proportion of these was despatched to London, but large numbers were forwarded to provincial places as far west as Swansea and to Scottish towns up to Aberdeen.

As soon as picking begins, a large number of ventilated passenger and goods vans is allocated to rail services between growing areas and the principal destinations throughout the season, and these vehicles are used in the formation of regular express services in order to enable the fruit to reach the markets very early on the morning after despatch. For the London markets, special trains are scheduled to leave the growing areas beginning in the early morning and continuing throughout the day. To facilitate the transport arrangements, railway control offices are established in the various growing centres, and, by means of advices from the stations at which fruit is being loaded, indicating the number and destination of the vans, the necessary trains are arranged with the minimum of delay.

The association of strawberries with cream is a long-established one, and epicures would doubtless look askance at an association of strawberries with carbon-dioxide, or dry-ice as it is more commonly known. Yet, with the tendency on the part of growers to extend their sales areas, many of them are taking advantage of this latest form of refrigeration which has been introduced by the railway companies. It consists of insulated containers equipped at the top with chambers containing dry-ice. The use of these containers enables fruit destined for canning factories to be supplied from distant growing areas with a low percentage of wastage, while that for jam factories is delivered in better condition, which facilitates the removal of stalks and increases the proportion of whole fruit in the jam. Fruit intended for retailing to the public also arrives in better condition when despatched by this means and commands a higher price in the shops. These facts are being realised by a steadily increasing number of growers, with the result that the number of chips carried by the refrigerated service has trebled in the last two years. The railway companies' country lorry services, which have been greatly extended during the last few years, also relieve growers of the necessity of conveying the fruit to the stations. These services form an important link between the growing fields and the railheads, and the maintenance of these road services at regular times to connect with the despatch of the special trains has proved of considerable advantage to growers.

* * * *

Paris, Lyons & Mediterranean Railway Company

THE report for the year 1937 will be the last to be issued by this company as a separate railway undertaking, since its railway has been incorporated, as from January 1, 1938, with the other chief systems, in the French National Railways Company, which now operates the railways of the country as a single unit. Results for the year 1937 were even more unfavourable than those for the previous year; due to causes entirely beyond the control of the management. Although receipts rose by fr. 678,554,516 or 24·05 per cent., expenses also advanced by fr. 1,097,068,033 or 37·67 per cent., chiefly because of social legislation, with the result that the loss on working was increased by fr. 418,513,517. After allowing for interest and other financial charges, amounting to fr. 924,134,293, the total deficit in 1937 to be covered by the common fund is fr. 1,461,461,577, or about fr. 435,000,000 greater than that for 1936. Revenue from the property account amounted to fr. 13,948,611, an increase of fr. 409,530 on 1936. The dividend is fr. 70 on each fr. 500 share, made up of fr. 56 from railway operations and fr. 14 from property account. A special bonus of 50 fr. a share is also paid out of the sum of 6,664,000 Swiss francs received from the Swiss Federal Railways for the immediate capitalisation of the remainder of the annuity (due to expire in 1958) receivable in respect of the purchase of the line from La Plaine to Geneva.

In passenger receipts there was an increase of fr. 240,939,350 or 30·33 per cent., with an increase in the number of passengers of 11,903,057 or 14·39 per cent. The improvement in passenger traffic was influenced largely by the Paris Exhibition and the extension of holidays with pay and receipts also benefited from the higher tariffs. An important acceleration between Paris and Marseilles in each direction was provided by the transformation of two rapides into two streamlined trains, and a new rapide in each direction has been put on between Paris and Geneva. The proportionate use of the three classes of carriage was much the same as in the previous year. Nine per 1,000 passengers were first class in 1937, against 8 per 1,000 in 1936. Second class passengers were 58 per thousand in both years, and third class 933 per thousand in 1937 against 934 in 1936. Receipts per fr 1,000 were fr. 79, against fr. 83, in the first class, fr. 234 against fr. 233 in the second, and fr. 687 against fr. 684 in the third. New railcar centres were established at Roanne and Clermont-Ferrand during the year, at the close of which there were 150 railcars in service. Railcar-kilometres run during the year were 9,249,692, against 7,144,436 in 1936. These figures are not included in the train-kilometre totals given in the accompanying table. Passengers in the associated and tourist road services increased from 4,418,327 to 5,224,850, and the profit accruing to the company was fr. 311,300, an increase of 20 per cent. Passenger services on the lines Amberieu to Montalieu-Vercieu (18 km.) and Bourron to Malesherbes (27 km.) have been withdrawn and replaced by road services. Goods traffic receipts advanced by fr. 440,157,755 or 22·11 per cent., and the tonnage by 953,617 tons or 2·97 per cent. The chief increases in tonnage were:—Coal and coke 4 per cent., *produits métallurgiques* 10 per cent., other minerals 46 per cent., and timber for construction purposes 10 per cent. On the other hand there were decreases of 11 per cent. in lime, cement,

&c., of four per cent. in wines and spirits, and of 7 per cent. in inflammable liquids.

	1937	1936
Average kilometres worked ..	9,949	9,949
Train-kilometres	113,609,003	107,913,800
Passengers	94,628,678	82,725,621
Goods, tons	33,023,806	32,070,189
Ton-kilometres	8,888,513,886	8,416,268,710
Average haul	269·15 km.	262·43 km.
Operating ratio, per cent.	114·57	103·23
	Fr.	Fr.
Passenger receipts	1,035,240,005	794,300,655
Goods traffic receipts	2,431,240,405	1,991,082,650
Total receipts	3,499,606,245	2,821,051,729
Total expenses (net)	4,099,521,766	2,912,453,733
Loss	509,915,521	91,402,004

The wage bill has advanced from fr. 1,718 millions in 1936 to fr. 2,325 millions in 1937, and is 58 per cent. of the total operating expenses. The number of staff has had to be increased from 106,278 to 135,445. Of the additional staff some 24,000 have been required to comply with the 40-hour week laws. The coal bill in 1937 was fr. 460 millions, an increase of fr. 152 millions, due to growth of traffic and higher prices. Liquid fuel costs rose from fr. 6 millions to fr. 13 millions, in consequence of railcar development. Other expenditure, at fr. 1,212 millions, showed an increase of fr. 331 millions on the previous year. Roiling stock was increased during the year by the addition of 33 railcars, 13 bogie third class carriages, and two sets of 9 steel bogie coaches each, for suburban service. Orders were placed for 20 railcars and 50 third class bogie coaches. Some 475 kilometres of track were renewed during the year. Quadrupling of the section between Villeneuve-la-Guyard and Sens on the Paris—Dijon main line was brought into use on November 30, 1937. Six level crossings were eliminated during the year, and there are fresh developments in the provision of warnings at crossings. The installation of automatic block colour-light signalling in the Paris suburban area, has been completed, namely, from Paris to Villeneuve-Saint-Georges and thence to Corbeil, as well as between Montereau and Sens. Work is being proceeded with on a similar installation between Les Laumes-Alesia and Blaisy-Bas.

* * * *

Tramroad and Tramway

ONE of the difficulties experienced in examining early documents referring to railways is that of terminology, for the word railways was comparatively a late comer (see our issue of April 29 last), and, although rails are mentioned in very early years, the usual term for a line of rails was a " waggon-way." " Tramway " and " tramroad " are not words of great antiquity (contrary to popular impression) although " tram " is. In old Scandinavian *traam* or *trum* meant a beam of wood, and as such came into the English language, especially in the North. An interesting early mention of the word occurs in a Scottish legal decision of 1601 which refers to the " tram or beam of the gibbet." Equivalent words for a beam in other Teutonic languages were the Low German *Traam*, old High German *Dram*, and old Dutch *Drom;* and in Latin *trabes*. It has been suggested that the derivation of tramroad may be found in the Latin *trames*, a bypath, footpath, or road (see " Aeneid " vi. 676: *Et facili vos tramite sistam*), but the way in which the word came into use in England leads us to think this origin, though plausible, is improbable. In its old meaning of a beam, the word tram became associated with transport as the name for a quadrilateral frame on which baskets of coal were conveyed. At first it was probably carried by bearers; then dragged like a sledge; and afterwards provided with low wheels on which to run. As mining vehicles " trammys " are mentioned in 1516-17 (Durham Acc. Rolls—Surtees), and trams in 1585 (Wills and Inv. N.C.—Surtees—II).

Probably the first use of the word tram in connection with a highway is to be found in the will made by Ambrose Middleton of Skirwith (County of Cumberland) and Barnard Castle (County Durham), dated August 5, 1555, by which a sum of money was left for the repair of a highway or tram. As it is not until two centuries later that we find the word tram used to mean a form of railway, it may be assumed that the Middleton will referred to a log road. Parliament appears to have used such a word in connection with a line of rails for the first time in 1799, and the *Journals of the House of Commons* under the date of February 18 of that year record the lodging of a petition for building the Monmouth Dram Road. On June 10 of the same year a committee was appointed to consider the expediency of requiring notices to be given of any intended application to Parliament for leave to bring in a Bill for " the making of Ways or Roads, usually called Railways or Dram Roads "; and on June 25 a resolution was passed making a Standing Order that the Standing Orders of the House, of May 7, 1794, relating to canals, etc., be extended (with minor modifications) to Railways or Dram Roads. In the more familiar form of tramroad, the word may be found in various South Wales agreements and other legal documents from 1800 onward, and so it appeared in such early railway Acts as those relating to the Carmarthenshire Railway or Tramroad Company (June 3, 1802), the Sirhowy Tramroad Company (June 26, 1802), and the Oystermouth Railway or Tramroad Company (June 29, 1804). Although Benjamin Outram took a prominent part in the construction of plateways, especially in South Wales, we do not know of the slightest evidence that the term " outram-way " was ever employed, and the oft-repeated theory that tramroad is short for " outram-road " is characterised by Professor Skeat (Etym. Dict.) as a " silly fiction." He adds that " Outram, if shortened to one syllable, must become *out* rather than *ram* or *tram*."

Although the distinction was not invariably preserved, the custom in the early years of the eighteenth century was to use the words tramroad and tramway for a line of rails designed for unflanged vehicles. For example, E. Mackenzie's " History of Northumberland " (1825) says: " From recent experiments . . . it has been ascertained that upon an edge-railway one horse can work with much greater load . . . than upon a tramway." The " Penny Cyclopædia " (1843) defines tram-road as " a road prepared for the easy transit of trams . . . a kind of railway adapted for the passage of vehicles with wheels of the ordinary form." Naturally most of the early plateways were used exclusively for mineral traffic, and so the word tramroad came to be accepted as synonymous with a private mineral line, whatever its form of rail and wheel. Moreover, the practice arose of laying along streets parallel lines of stone (and occasionally iron) for the wheels of ordinary carts, and these were commonly called tramways long before the days of ordinary passenger street tramways. Doubtless this accounted for the adoption of the word tramway when passenger street transport began. In the last quarter of the nineteenth century " tramroad " and " tramway " thus became of indefinite meaning, and in 1901 the Private Bill Standing Orders of the House of Lords defined that " in these Orders . . . the term tramway means a tramway laid along a street or road; the term tramroad means a tramway laid elsewhere than along a street or road." Presumably this vague " definition " is the one still commonly current, but in earlier years there is little doubt that a tramroad usually meant a plateway for the accommodation of unflanged wheels.

XUM

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

A Timetable Centenary

60A, Green Lane,
Northwood, June 11

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In a recent issue you were so good as to publish a letter of mine enquiring for particulars of early editions of Drake's railroad maps and timetables of the London & Birmingham, Grand Junction, and Liverpool & Manchester Railways. The copy in my possession was dated November, 1838.

I have now seen an earlier issue, " New Edition, Corrected to October, 1838," and the Birmingham City Librarian has kindly sent me a copy of an advertisement appearing in Aris' *Birmingham Gazette* of July 23, 1838, referring to Drake's maps and timetables as " just published." This was obviously the advertisement of the first edition which was, therefore, issued while part of the journey between London and Birmingham was still done by coach.

James Drake, of Birmingham, appears to be the first compiler known to take the timetables of three railway companies and reproduce them in one folded sheet bound up with maps " in a case for the pocket." It is interesting to note that Drake added to his collection of railway information, and the sheet issued in November, 1838, included timetables of the Manchester, Bolton & Bury and the North Union railways, though the title page did not mention them.

Yours faithfully,
REGINALD B. FELLOWS

Railway-matrimoni-acs

London, S.W.
June 14

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I have come to the reluctant conclusion that " railwayacs " should not become what Gilbert called " conjugally matrimonified." A harsh and ever cynical view, mayhap, but one that carries a modicum of supporting evidence. How often has one of these enthusiasts had his journey by train completely wrecked by the unwitting sabotage of his better half?—for example, a terribly vital and strategic minimum speed missed, or, what is far more soul-searing, two consecutive readings of 17 and 163·83 m.p.h., simply because a piercing falsetto voice has dragged him from Elysium down to Limbo and requested him (*a*) to give her another cigarette; (*b*) to open the window; (*c*) to show her the way to the dining-car; or (*d*) to look at a church, cow, waterfall, filling station, yokel, or some similarly entrancing object. Not once, but hundreds of times.

And that is only one phase of the tragedy. Saturday afternoons, whereon unmarried men can disport themselves to their souls' content, bring no such emancipation to the wretched Benedick, and it is only too true that greater love hath no (married) railwayman than this, that he give up a run behind his favourite driver on the Cheltonian or Royal Scotsman in order to take his spouse to see Marlene Garbo in " Flaming Heartache."

On the distaff side, too, things are more than a little poignant. I have heard one wife complain that it was all very well saying that " Romance brought up the 9.15," but her trouble was that romance, as such, had been brought down to the ground by 10.30's unlimited. So there we are. A grim situation, forsooth. A " railwayac " once coupled, cannot, with decency, slip his helpmate unfeelingly at a wayside station on life's journey, and to train her up to holding three of his nine stop-watches or to reading, in her leisure moments, the working timetables of the London, Western & Eastern Railway savours not only of the impracticable, but of rank injustice.

No; what is done cannot be undone, and one can merely hope piously that temperamental oscillation will not lead to a major derailment. There is no reason, however, why I should not utter a solemn warning to others—to remain single, if they want to avoid many unhappy returns. . . .

Yours, &c.,
FORMER SIX-FOOT SINGLE

[We have received the above cheerless and disgruntled communication from a disillusioned correspondent who suggests its publication as a timely warning.—ED., *R.G.*]

PUBLICATIONS RECEIVED

" Notre Metier."—With the formation of the French National Railways Company, the staff journals of the former independent systems are no longer published, and have been replaced by a new publication addressed to the National Railways employees collectively. This is entitled *Notre Métier*, and will appear at two-month intervals. The first issue is dated May this year. M. Guinand, President of the Administrative Board of the railways, addresses a message to the 500,000 readers of *Notre Métier* in which he states the desire of the management that this paper may become a valued element in both their working and private lives. The contents of the first issue make a successful beginning towards the attainment of this ideal by striking a balance between railway news, sporting, home, and women's interests. In some cases amusement for leisure moments is combined with enthusiasm for railways, as in a list of brain-teasers including such questions as " What is the average length of wood sleepers," and " Name the different gauges found in the principal countries of the world."

Railway articles in the first issue review such diverse aspects of the industry as recent station architecture, and centralised control of electric substations on the Paris–Le Mans main line. That love of his country which is the Frenchman's spontaneous tribute to its beauty and variety is appealed to in an illustrated article on " The Rivers of France." Copious illustration, indeed, is a feature of the journal that is likely to do much in helping it to gain that widespread appreciation from railwaymen and their families that is the goal of the promoters. *Notre Métier* is distributed free to the staff, but is on sale to the public at station bookstalls and inquiry offices for fr. 2·50 a copy.

Land Settlement in Canada.—The Department of Colonisation and Agriculture of the Canadian National Railways has issued an illustrated folder with the above title describing opportunities for the new settler. The Canadian National Land Settlement Association has a scheme with the concurrence of the Canadian Government by which, subject to conditions specified in the folder, it will accept agricultural families or single men for settlement on the land. Settlers are given every advice and assistance free of charge, the sole interest of the association being to locate them on farms on land adjacent to the Canadian National Railways system. A coast-to-coast map of the railways is reproduced in the folder.

Aluminium.—The Aluminium Union Limited, of Bush House, London, has issued for distribution to visitors to its stand at the Glasgow Exhibition an illustrated booklet in four languages describing the uses and methods of marketing of aluminium. Several illustrations of railway rolling stock are reproduced, including one of the Silver City Comet diesel train of the N.S.W. Government Railways. At the same time it is shown that aluminium has many applications closer to the daily life of the ordinary man and woman than those of heavy engineering, such as for panelling of motor vehicles, aluminium foil for packings, and overhead transmission lines for domestic electric supply. The booklet is printed in the English, French, Spanish, and German languages.

THE SCRAP HEAP

LOOKING FOR THE TRAIN

In Sir Daniel Gooch's diary there is an amusing account of what happened in the early days on the G.W.R. when a train was late. He says: "It was no uncommon thing to take an engine out on the line to look for a late train that was expected, and many times have I seen the train coming and reversed the engine, and run back out of its way as quickly as I could."

* * *

A curiosity noted on the Wellington to Crewe railway some time ago, writes a correspondent, was that the guard of the afternoon train carries a supply of oil lamps, one of which he hangs up at each of several unstaffed stations, and collects them in the morning.

* * *

THE OLD SCHOOL TIE

The story is told of one of the new graduate trainees who had been sent to begin his duties at a main-line Lancashire station. After being duly interrogated as to his name, age, &c., the stationmaster said: "Where was you heddicated?" "Eton, sir," promptly replied the trainee. "Ho!" said the stationmaster, "'Eaton Mersey or 'Eaton Chapel?"

* * *

THE MAIN LINE TO THE NORTH

An examination of the timetable of any main-line railway ninety or so years ago is fairly certain to reveal a wealth of interest regarding operating conditions of the period, and the sheet reproduced alongside (recently loaned us by a correspondent) provides a particularly fruitful source of information. The London & Birmingham Railway had then (June, 1841) been open throughout for nearly three years and had passed its teething troubles. It was still the only main line to the north of the metropolis, and the three constituents of the Midland Railway—the Birmingham & Derby Junction, the Midland Counties, and the North Midland—were in full operation as feeders from Rugby and Hampton to Leicester, Nottingham, Derby, and Leeds.

Although the timetable shows only the actual line of the London & Birmingham Railway, it will be seen that the footnotes indicate the connections northwards to Liverpool, Manchester, Preston, and Lancaster. The only branch was that to Aylesbury, and the fact of a through train to London in the morning and to Aylesbury in the afternoon emphasises the greater importance of the branch when it provided the only rail access to Aylesbury. The timings of the 7 a.m. third class train from London to Birmingham show that plebeian travellers had to wait at Blisworth for their social betters to pass, and to be content with the consequent through journey time of 8½ hr.

Obviously the first class traveller was looked upon as the main source of passenger revenue, but, even in his most exalted form as a traveller in his own private (road) carriage, he had to give place to the speed requirements of the mail, for it is stated that private carriages and horses could not be conveyed by the mail trains. Punctuality of a kind to excite envy in modern breasts was apparently envisaged (even if not always attained), as the prominent notice at the top of the bill says boldly that the time "is that of the arrival of the trains" without any of the qualifications subsequently introduced. Moreover, early rather than late running seems to be suggested by the injunction to passengers to be at intermediate stations ten minutes earlier than the scheduled time "to ensure their being booked."

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London and Birmingham Railway.

TIME TABLE.

NOTICE. The time is that of the **Arrival** of the Trains, and Passengers, to ensure their being booked, should be at the PRINCIPAL STATIONS **five minutes** earlier, and at the INTERMEDIATE STATIONS **ten minutes** earlier.

Carriages intended to receive Passengers who are expected by the Trains at the London or Birmingham Stations, should be on the Arrival Side of such Stations, a quarter of an hour, at least, before the time specified in the Tables.

DISTANCE FROM EUSTON STATION.	LONDON to BIRMINGHAM. STATIONS.	Down Trains.													Sunday Trains.				
		6 A.M. Mixed. *‖‡‖	7 A.M. Third Class	8 A.M. Mixed	8½ A.M. First Class *§†‖‡	9½ A.M. Mixed to Rug. ‖‡	9½ A.M. Mail. 1st Cl. *§	11 A.M. Mixed ‖‡	2 P.M. Mixed †	3 P.M. Mixed to Aylesbury.	5 P.M. Mixed ‖	6 P.M. Mixed to Wolverton.	8½ P.M. Mixed *§	9 P.M. Mail ‖‡	8 A.M. Mixed ‡‖	9½ A.M. Mail. 1st Cl. *§	6 P.M. Mixed to Wolverton. *§	8½ P.M. Mail Mixed *§	9 P.M. Mail ‖‡
Miles		H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
—	Leave LONDON at	6. 0	7. 0	8. 0	8.45	9.15	9.45	11. 0	2. 0	3. 0	5. 0	6. 0	8 30	9. 0	8. 0	9.45	6. 0	8.30	9. 0
11¼	Arrive at HARROW	—	7.42	8 29	—	—	—	—	2.23	3.29	5.29	6.29	—	—	8.32	—	6.29	—	—
17¼	WATFORD	6.46	8. 2	8.47	—	—	—	11.47	2.47	3.47	5.47	6.47	—	—	8.51	—	6.47	—	—
21	KINGS LANGLEY	—	8.17	8.57	—	—	—	—	—	3.57	—	6.57	—	—	9. 1	—	6.57	—	—
24½	BOXMOOR	—	8.32	9. 7	—	—	—	—	3. 7	4. 7	—	7. 7	—	—	9.12	—	7. 7	—	—
28	BERKHAMPSTEAD	—	8.47	9.19	—	—	—	—	3.19	4.19	—	7.19	—	—	9.25	—	7.19	—	—
31½	TRING	7.21	9. 1	9.31	10. 8	10.36	11. 3	12.24	3.31	4.31	6.21	7 31	9.49	10.11	9.36	11. 3	7.31	9.49	10.11
43½	AYLESBURY	—	—	10.15	—	—	—	—	—	5.15	—	8.15	—	—	10.15	—	8.15	—	—
41	LEIGHTON	7.41	9.36	9.51	—	—	—	12.44	3.51	—	6.40	7.51	—	—	9.56	—	7.51	—	—
46½	BLETCHLEY (& Fenny Stratford)	—	9.58	10. 8	—	—	—	—	4. 6	—	—	8. 5	—	—	10.12	—	8. 6	—	—
52½	WOLVERTON	8. 7	10.10	10.20	10.55	11.22	11.47	1.11	4.20	—	7. 5	8.30	10.35	10.55	10.25	11.47	8.30	10.35	10.55
69	ROADE	—	10.40	10.49	—	—	—	—	4.49	—	7.34	—	—	—	10.55	—	—	—	—
62½	BLISWORTH	8.42	12.30	10.58	—	11.55	12.20	1.48	4.58	—	7.42	—	11. 8	11.25	11. 7	12.20	—	11. 8	11.25
69½	WEEDON	8.59	12.49	11.17	11.51	12.12	12.36	2. 7	5.17	—	8. 1	—	11.26	11.42	11 26	12.36	—	11.26	11.42
75½	CHICK (and Welton)	—	1. 9	11.35	—	—	—	—	5.35	—	—	—	—	—	11.46	—	—	—	—
83	RUGBY (Mid. Co. Jn.)	9.30	1.28	11.56	—	1. 0	1. 8	2.43	5.56	—	8.38	—	11.58	12.15	12. 5	1. 8	—	11.58	12.15
89	BRANDON	—	1.48	12.13	—	—	—	—	6.13	—	—	—	—	—	12.25	—	—	—	—
94	COVENTRY	9.57	2. 2	12.26	12.52	—	1.34	3.12	6.26	—	9. 2	—	12.27	—	12 40	1.34	—	12.27	—
103	HAMPTON (Derby Junc.)	10.25	2.36	12 55	1.21	—	—	—	6.55	—	—	—	—	—	1.15	—	—	—	—
112½	BIRMINGHAM about	11¼	3¼	1¼	2	—	2¼	4¼	7¼	—	10¼	—	1¼	—	2	2¼	—	1¼	—

DISTANCE FROM BIRMINGHAM.	BIRMINGHAM to LONDON. STATIONS.	Up Trains.													Sunday Trains.				
		Mixed from Wolverton.	7 A.M. Mixed	Mixed from Aylesbury.	8½ A.M. Mail 1st Cl. *§	10 A.M. Mixed † ‖	12 NOON Mixed *	1½ P.M. Mixed • †	Mixed from Rugby. ‡‖	2½ P.M. Third Class	5 P.M. First Class *§	6 P.M. Mixed. ‖‡	12 P.M. Mixed * §	1 A.M. from Rugby ‖ ‡	Mixed from Wolverton.	8½ A.M. Mail 1st Cl. *§	1½ P.M. Mixed. ‡*‖	12 P.M. Mail Mixed. *§	1 A.M. from Rugby ‖ ‡
Miles	LEAVE	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.	H. M.
—	BIRMINGHAM at ARRIVE AT	—	7. 0	—	8.30	10. 0	12. 0	1.15	—	2.20	4. 0	6. 0	12. 0	—	—	8.30	1.30	12. 0	—
9½	HAMPTON (Derby Junc.)	—	7.20	—	—	10.20	12.20	1.35	—	2.54	4.20	6.19	—	—	—	—	1.51	—	—
18½	COVENTRY	—	7.47	—	9.12	10.47	12.47	2. 4	—	3.29	4.47	6.45	12.47	—	—	9.12	2.17	12.47	—
23½	BRANDON	—	8. 5	—	—	—	1. 5	—	—	3 47	—	7. 3	—	—	—	—	2.35	—	—
29½	RUGBY (Mid. Co. Jn.)	—	8.23	—	9.43	11.17	1.23	2.35	4. 0	4.13	5.17	7.18	1.23	1. 5	—	9.43	2.53	1.23	1. 5
37	CHICK (and Welton)	—	8.50	—	—	—	1.50	—	—	4.41	—	7.42	—	—	—	—	3.20	—	—
42½	WEEDON	—	9. 4	—	10-18	11.54	2. 4	3.11	4.31	5. 4	5.54	7.56	2. 4	1.40	—	10.18	3.34	2. 4	1.40
49½	BLISWORTH	—	9.27	—	—	12.16	2.28	3.35	4.55	5.28	6.16	8.17	2.28	2. 0	—	—	3.58	2.28	2. 0
52½	ROADE	—	9.35	—	—	—	2.38	—	—	5.37	—	8.27	—	—	—	—	4. 8	—	—
59½	WOLVERTON	6.45	9.55	—	11. 5	12.40	3. 0	4. 0	5.20	6.15	6.40	8.45	2.55	2.30	6.45	11. 5	4.30	2.55	2.30
65½	BLETCHLEY (& Fenny Stratford)	6.58	10.21	—	—	—	3.26	—	—	6.37	—	9.11	—	—	6.58	—	4.56	—	—
71½	LEIGHTON	7.14	10.37	—	—	1.16	3.42	—	—	6.58	7.16	9.26	—	—	7.14	—	5.12	—	—
	Leave AYLESBURY for LONDON	7. 0	—	11. 0	—	—	—	—	—	—	7. 0	—	—	—	7. 0	—	5 0	—	—
80½	TRING	7.41	11. 4	11.26	12. 6	1.42	4.11	5. 0	6.21	7.30	7.42	9.51	4. 1	3.35	7.41	12. 6	5.41	4.1	3.35
84½	BERKHAMPSTEAD	7.54	11.16	11.39	—	—	4.25	—	—	8.12	—	10. 3	—	—	7.54	—	5.54	—	—
87½	BOXMOOR	8. 4	11.25	11.49	—	—	4.34	—	—	8.27	—	10.12	—	—	8. 4	—	6. 4	—	—
91½	KINGS LANGLEY	8.12	—	11.57	—	—	—	—	—	8.37	—	—	—	—	8.12	—	6.12	—	—
94½	WATFORD	8.21	11.40	12. 7	—	2.11	4.49	—	—	8.47	8.11	10.27	—	—	8.21	—	6.21	—	—
100½	HARROW	8.39	11.55	12.24	—	—	5. 7	—	—	9. 7	—	10.42	—	—	8.39	—	6.39	—	—
112½	LONDON about	9¼	12¾	1¼	1¼	3¼	6	6¼	8	10	9¼	11¼	5¼	3	9¼	1¼	7¼	5¼	3

N.B.—The times of the Trains conveying the Mails are fixed by the Postmaster General, under the powers granted by Act of Parliament, Act I & 2 Vic. cap. 98.

* Trains in conjunction with the Grand Junction, Liverpool and Manchester.

† Trains in conjunction with the Birmingham and Derby Junction.

‡ Trains in conjunction with the North Midland.

§ Trains in conjunction with the North Union, and Lancaster and Preston Junction.

‖ Trains in conjunction with the Midland Counties, Leicester, Nottingham, and Derby.

Waiting Rooms, with Female Attendants, are provided at the Euston, Watford, Wolverton, Rugby, Coventry, and Birmingham Stations: Refreshments at Wolverton and Birmingham.

Private Carriages and Horses cannot be booked unless they are at the Stations fifteen minutes before the time above specified; nor can they be conveyed by the Night Mail Trains up or down, nor by the down Day Mail Train.

Carriages, Trucks, and Horse Boxes are kept at all the Principal Stations; but to prevent the possibility of disappointment, it is requisite that one day's previous notice be given whenever they are required.

The Company will only hold themselves responsible for Luggage when it is booked and paid for, according to its value; and they strongly recommend to Passengers to have their Name and Destination in all cases distinctly marked thereon, and to satisfy themselves that it is deposited on the Company's Carriages.

Post Horses, for the conveyance of Carriages arriving at the Euston Station, are always in readiness, at a charge of 10*s.* 6*d.*, including Post-boy, to any part of London.

1st JUNE, 1841.

[See over.]

Smith and Ebbs, Printers, Tower-hill, London.

An official timetable sheet dated June 1, 1841, of the London & Birmingham Railway, at the time that railway provided the only line from London to the North

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

INDIA

Research Work on Railways

Considerable attention has been given in recent years to the conduct of research in various departments of railway activity in India. The Railway Administration Report for 1936-37 summarises the more important items of research and development initiated during the year in the Mechanical and Civil Engineering Departments.

On the mechanical side, the dynamometer car was used extensively during the year, and valuable information was obtained relating to the rating of engines and the performance of piston and poppet valves, feed-water heaters, journal bearings and other matters. The various tests carried out with the dynamometer car were in close collaboration with the Central Standards Office.

Investigations into the possibilities of reducing tare weights of coaching and goods stock showed that reduction of about two tons was effected by the use of high-tensile steel in an experimental carriage underframe. A corresponding saving in weight was also obtained by substituting high-tensile steel in an experimental "CR" type wagon.

Special forms were prepared by the Central Standards Office in order to systematise methods of conducting trials and experiments, and to ensure that the data required were submitted on a comparable basis. The fact that no fewer than 100 trials and experiments were initiated on the recommendations of the Locomotive, Carriage & Wagon and Electrical Standards Committees belies the fear that progress in standardisation is attended by a set-back in innovation.

Other investigations included the effect of climate on paints in various parts of the country and the inauguration of arrangements for the application of the Hollerith system to analyses of wagon defects.

On the civil engineering side, investigations begun in November, 1935, were continued to determine for Indian conditions the correct relation between axleload, weight of rail, nature of track structure, and permissible speed of trains. For this important and far-reaching research a special electro-magnetic recording apparatus was obtained from America. Numerous tests carried out on various railways indicated the practicability, under certain conditions, of running heavier trains at higher speeds on the existing rails.

Six sets of crossings were subjected to a special heat treatment at the Jamalpur locomotive works in order to harden the wearing surfaces. The efficacy of this treatment of the crossings is on trial by actual experience in service in the E.I.R. track. Promising results were obtained from the trials conducted by various railways with the Duplex type of joint sleepers combined with the rail-free principle with the object of improving the support afforded to rail joints. The C. S. T. 9 type of sleeper designed by the Central Standards Office to improve the lateral stability of the track was under extensive trial, reports of which are encouraging.

Trials were initiated in the use of rubber pads between rails and sleepers on girder bridges. The East Indian Railway accepted designs for the experimental use of steel sleepers in place of wooden sleepers on girder bridges.

Action taken by the Mechanical Department to reduce the percentage of reciprocating parts balanced in locomotives resulted in an appreciable reduction of hammerblow on rails.

Travelling Without Tickets

During the year 1936-37, 2,843,051 passengers were detected travelling without proper tickets on Class I railways, and the amounts due from them came to Rs. 26,50,739. Ticketless travel was particularly rampant on the Bombay, Baroda & Central India Railway, the detected cases numbering well over 700,000. The intensification of the ticket-checking machinery was the principal measure taken by the railways to prevent fraudulent travel.

Increased Construction of Carriages and Wagons

The value of timber purchased for the construction of carriages and wagons by Class I railways (other than the Nizam's State Railway and the Jodhpur Railway) rose from Rs. 40·28 lakhs in 1935-36 to Rs. 42.75 lakhs in 1936-37, the larger consumption of timber being due to increased construction activity. The seasoning kilns at Lillooah, E.I.R., remained closed during 1936-37, chiefly owing to the reduced price of teak with which kiln-seasoned woods of other species could not compete. Teak is used without kiln seasoning.

South Indian Railway Travel Concessions

The various concessions and facilities provided by the South Indian Railway are incorporated in a 48-page publication issued by the administration. The book opens with a Pilgrim Calendar giving the dates of the principal festivals on the S.I.R. between April and July, and the specially reduced third class fares from important stations to the various places of pilgrimage. Details of the numerous travel concessions, refreshments arrangements at stations, retiring rooms, the cost of special trains, tourists' saloons, third class pilgrim tourist cars, and the cost of transportation of motorcars are all included in this useful book. The attractions of South India are briefly described, and the information given about the railway route to Ceylon will be valuable to the traveller who chooses to go overland to that island.

NEW ZEALAND

Workshop Development

As a result of the Fay-Raven Commission's Report of 1924-25, the New Zealand Railways built four main workshops and equipped them with the most modern machinery and on a scale which was estimated to be sufficient to meet the needs for another 20 years. In spite of this apparently liberal provision, the expansion of traffic and replacement of obsolescent stock has recently taxed the resources of these workshops to the utmost, and already some substantial additions of buildings and machinery have been required.

For the same reasons, some of the subsidiary workshops away from the main centres have required enlargement. For instance, at Wanganui, the centre of the western portion of the North Island system, an extension of the workshops by an area of 100 ft. by 90 ft. has been approved. This will relieve pressure at the Hutt and Otahuhu principal workshops, and it is anticipated that 1,200 more wagons will be repaired at Wanganui annually as a result of these extensions. New and up-to-date machinery is to be installed, including lathes of the most modern types.

With the Hutt workshops engaged more than ever in the building of buses, railcars, and locomotives, less space will be available for repair work, and a larger amount of this work will in future have to be carried out at Wanganui. It is understood that the work already authorised is but the first of a number of extensions to be made to the Wanganui (East Town) shops, which are likely to become increasingly important as a repair shop for the railways generally, and return to the status held by them prior to 1926.

Importance of Railways to the Dominion

Speaking recently of the important part played by the railways in the productive life of the Dominion, the Minister of Railways pointed out that practically every ton of produce shipped from New Zealand was handled, at some stage, by the Railways Department. Certain commodities, such as frozen and chilled beef, butter, and cheese, were, he said, sometimes handled twice, first as the raw product from the farm to the works and later as the finished article from the works to the ship's side. It was safe to assert that no other mode of transport could handle, in the time available, the great quantities of produce, hauled in specially designed

wagons and loaded into overseas liners, without causing most serious congestion on the wharves and their approaches.

New Railway Connection Approved

The recent decision to complete the 10-mile gap between the present railhead (Tangowahine) of the North Auckland main trunk line and Dargaville, the principal centre on the west coast not now connected with the main railway system, is in accordance with the Government's policy to complete those lines on which large sums have already been expended, and which were abandoned during the depression period. It has further been decided to alter the original alignment so as to eliminate a number of dangerous level crossings it entailed.

SWITZERLAND

Welded Rails on the Federal Railways

Continuous progress has been made on main lines of the Federal Railways during recent years in the replacement of 12- and 15-m. rails by 24-m. lengths, but under present financial conditions it is not possible to use 24-m. rails on all the more important routes in the near future. In order, therefore, to insure smoother running in the meantime, shorter rails are being butt-welded into 24-m. and 30-m. lengths, with satisfactory results. On all sections where the rails are still good for some 10 to 12 years, this procedure is now being carried out, and in certain stations and in tunnels, considerably longer rails have been produced by welding. In the Gotthard and Hauenstein tunnels, for instance, 18- and 24-m. rails were welded into 90- and 96-m. lengths respectively, thereby greatly improving the running.

CHINA

Increased Exports via Canton-Hankow Railway

With the object of offsetting the adverse trade balance and of obtaining foreign exchange to stabilise the currency position, the Chinese Government is making great efforts to increase exports. In spite of the fact that the new Canton-Hankow Railway has been bombed almost daily in either the Canton area or up-country, it has seldom been interrupted for more than a matter of hours, prior to the last few weeks' intensive bombardment. Moreover, it is the only important artery of communications left to the Government, by which exports can be sent to the coast from the interior. Accordingly, the Ministry of Communications has instructed the C.-H.R. to run at least two through trains daily from Hankow to Canton to cater for and encourage increased exports via this route. These exports consist mainly of wood-oil, antimony, cotton, bristles, and camphor. The Government aims at exporting £1,500,000 worth of products by this route each month. This civilian traffic is in addition to a heavy traffic in munitions and other supplies, but, being in the opposite direction, should balance it to some extent.

New Air Service

A new air service between Shanghai and Dairen, calling at Tsingtao, is to be put in operation by the Huitung Aviation Company. Douglas machines with a carrying capacity of fourteen passengers are to leave three times weekly in each direction, covering the journey in three and three-quarter hours.

SPAIN

Nationalist Government Annuls Popular Front Decree

A Decree has been issued by the Nationalist Government in Burgos, under date of April 21, annulling that of February 29, 1936, which ordered the reinstatement and compensation of all workmen dismissed for political offences. The new Decree will not have back effect, and any workmen already readmitted will continue in their employment and can be dismissed only on the usual terms. All pending claims for compensation or refund of fines are now annulled. The Decree of February 29, 1936, which was issued soon after the electoral victory of the Popular Front, gave rise to the reinstatement of a large number of railway employees, since the expression "political motives" was construed to include strikes, violence, and every conceivable form of offence leading to dismissal, and was given back effect to cover strikes as far back as that of the Northern Railway in 1917. Issued immediately after the general amnesty, the Decree meant that a number of employees went straight from jail back to their jobs, displacing other men who had been engaged or promoted. Nor could these latter be discharged or reduced in rank. Apart from the disastrous moral effect, the wages bill of the companies was overburdened to a point quite beyond their economic capacity. Then, again, the "compensation" included payment of arrears of wages during the whole of the period since the dismissal, and the aggregate of the claims under this head reached a fantastic figure.

Cheap Bullfight Fares

Large numbers of excursionists travelled from Seville to Cadiz on May 22, on the occasion of the bullfight in aid of naval charities. Special trains were run by the Andaluces Railway at exceptionally cheap fares. The distance between the two cities by rail is 153 km. (95 miles) and the ordinary single fare, third class, is 10 pesetas, equivalent, at the present exchange, to nearly 4s. 9d. The price of the excursion ticket for the double journey was 6½ pesetas (about 3s. 1d.) or just under one-third of the ordinary fare, and at the rate of ¼d. a mile. This reduction was fixed so as to compete with road vehicles. The inclusive ticket, rail fare, and admission, cost 13 pesetas.

Co-ordination

A Decree dated May 12, and published in the Burgos official *Bulletin*, orders that in future all matters concerning road transport shall be dealt with by the Railway Department of the Ministry of Public Works. This, says the Decree, is with a view to facilitating the early solution of the problem of co-ordination between the two forms of transport.

BRAZIL

Brazil-Paraguay New Lines

In regard to investigations at present being made by the Brazilian Consul-General at Assumption, Paraguay, regarding the advantages of linking up Campo Grande, in the State of Matto Grosso, with the Paraguayan town of Conception, the Minister of Transport of Brazil has informed his colleague for Foreign Affairs that steps are being taken at once to build a branch line from Campo Grande to Ponte Porã and another one to Bella Vista. Construction on the first of these branches has already been authorised by the President of the Republic, who has allocated the sum of 10,000 contos out of current estimates for work to be commenced immediately by the Northwestern Railway.

New Rio Terminus

With the completion of the first part of the electrification scheme, the most important work in hand at present is the construction of the new Dom Pedro II terminus at Rio de Janeiro. The front building is somewhat to the right and behind the existing station building, and will, when finished, run parallel to the Army General Headquarters, but separated from it by a handsome square 70 m. wide. At right angles to the main building, two avenues, 25 m. wide, are projected to facilitate the exit of passengers, and, with the expropriation of various sites and buildings, the station layout will have a uniform width of 125·50 m., in contrast with the existing funnel shape in plan which narrows to 28 m. going out. This will allow of 12 lines and 11 platforms, each 190 m. long by 7 m. wide.

The projected roof over the platforms is a single "honeycomb" arch constructed of "Junkers" steel sections giving the appearance of a great arch built solely of expanded metal. The front building is to be in reinforced concrete and will comprise a basement and six storeys with a 23-storey tower, 108 m. high, at the left-hand corner. The frontage, over all, will be 135 m. long, and the height, excluding the tower, 41 m. above street level. The new station layout has necessitated the removal of a considerable portion of Providencia hill situated close by.

XUM

BRITISH RAILWAY STATISTICS

"The Railway Gazette" monthly table for Feb., 1938, as compared with Feb., 1937, compiled from the Ministry of Transport Statement No. 219

Description	Great Britain*	G.W.R.	L.N.E.R.	L.M.S.R.	S.R.
PASSENGER TRAIN TRAFFIC—					
Number of pass. journeys (ex season ticket holders)	90,945,200	5,822,249	12,199,737	19,832,949	15,649,708
Increase (+) or decrease (−)	− 1,880,044	− 308,975	− 579,053	− 814,714	− 48,899
Passenger receipts (excluding season ticket holders)	£3,145,275	£385,031	£604,315	£947,393	£678,388
Increase (+) or decrease (−)	+ £69,484	+ £12,570	+ £10,264	+ £29,798	+ £12,850
Season ticket receipts	£736,395	£41,787	£122,068	£187,678	£243,829
Increase (+) or decrease (−)	+ £16,786	− £1,088	+ £5,164	+ £1,134	+ £9,056
Parcels and misc. traffic receipts (excluding parcels post)	£942,636	£170,424	£293,129	£358,566	£104,389
Increase (+) or decrease (−)	+ £5,333	− £412	+ £11,011	+ £3,440	− £8,087
FREIGHT TRAIN TRAFFIC—					
Freight traffic (tons) (excluding free-hauled)	23,898,696	5,714,505	10,793,267	11,314,429	1,319,731
Increase (+) or decrease (−)	+ 293,532	+ 224,566	+ 171,460	+ 51,013	− 14,123
Net ton-miles (excluding free-hauled)	1,393,217,277	264,373,894	468,487,645	568,451,445	54,818,332
Increase (+) or decrease (−)	+ 32,763,027	+ 13,906,381	+ 16,841,943	+ 1,539,477	+ 284,226
Average length of haul (miles) (excluding free-hauled)	58·30	46·26	43·41	50·24	41·54
Increase (+) or decrease (−)	+ 0·67	+ 0·64	+ 0·89	− 0·09	+ 0·66
Freight traffic receipts	£7,548,081	£1,287,000	£2,448,472	£3,182,000	£391,445
Increase (+) or decrease (−)	+ £149,620	+ £47,300	− £1,528	+ £88,000	+ £12,872
Receipts per ton-mile	1·300d.	1·17d.	1·25d.	1·34d.	1·71d.
Increase (+) or decrease (−)	− 0·005d.	− 0·02d.	− 0·05d.	+ 0·03d.	+ 0·05d.
Freight train-loads: Average train-load (tons)	132·52	139·14	136·99	130·63	105·66
Increase (+) or decrease (−)	+ 0·98	+ 3·54	+ 0·83	− 0·28	+ 0·98
Net ton-miles—					
Per train engine-hour	962·59	1,032·05	1,021·30	912·08	797·88
Increase (+) or decrease (−)	+ 12·73	+ 9·18	+ 11·73	+ 13·18	− 8·54
Per shunting-hour	910·26	834·08	1,010·63	934·30	585·52
Per total engine-hour	467·85	461·28	507·97	461·53	337·70
Net ton-miles per route-mile per working day	3,077	3,100	3,278	3,642	1,182
Increase (+) or decrease (−)	+ 91	+ 172	+ 133	+ 43	+ 13
Wagon-miles. Total	380,591,223	69,911,904	134,369,387	158,516,224	17,449,642
Increase (+) or decrease (−)	+ 531,571	+ 744,241	+ 2,076,466	− 1,930,038	− 32,482
Percentage of loaded to total	65·97	67·03	64·08	67·08	66·24
Wagons per train. Total	34·05	34·21	34·64	33·89	31·34
Increase (+) or decrease (−)	− 0·66	− 0·71	− 0·63	− 0·76	− 0·16
Loaded	22·46	22·93	22·20	22·74	20·76
Empty	11·59	11·28	12·44	11·15	10·58
Train-miles. Coaching—Per train-hour	15·16	14·14	14·29	14·34	17·99
Per engine-hour	12·26	11·26	11·07	11·11	15·31
Train-miles. Freight—Per train-hour	8·55	9·02	8·78	8·16	9·19
Per engine-hour	3·53	3·34	3·76	3·53	3·15
Engine miles. Total	47,845,377	7,739,169	13,378,497	17,661,205	6,241,377
Increase (+) or decrease (−)	+ 858,250	+ 191,763	+ 308,237	+ 192,546	+ 150,778
Mileage run by engines. Total train-miles—					
Coaching	23,128,777	3,154,229	5,318,020	7,333,290	4,654,716
Freight	11,177,645	2,043,673	3,879,084	4,676,996	556,790
Engine-hours in traffic. Total	5,275,961	923,048	1,589,778	2,074,700	500,264
Increase (+) or decrease (−)	+ 56,328	+ 27,729	+ 30,394	− 4,925	+ 2,480
Shunting miles per 100 train-miles—					
Coaching	7·27	6·99	6·62	7·73	7·73
Freight	72·31	82·98	66·54	68·50	93·50

Passenger Traffic Statistics: Number of journeys, receipts, and receipts per journey (excluding season ticket holders)—February, 1938

Subject	Great Britain	G.W.R.	L.N.E.R.	L.M.S.R.	S.R.	Cheshire Lines	Liverpool Overhead	L.P.T.B.†	Mersey
Full fares—									
Pass. journeys	30,147,577	522,405	834,099	1,123,809	2,308,220	10,457	149,184	24,452,726	71,088
Gross receipts	£725,697	£52,542	£90,280	£89,594	£150,597	£1,753	£1,605	£326,354	£1,225
Receipts per pass.	5·78d.	24·14d.	25·98d.	19·13d.	15·66d.	40·23d.	2·58d.	3·20d.	4·14d.
Reduced fares—									
Excursion and week-end—									
Pass. journeys	31,246,896	3,161,412	7,107,854	10,663,751	7,096,850	344,508	68,660	1,352,296	595,922
Gross receipts	£1,708,605	£259,017	£378,745	£618,323	£371,371	£17,987	£668	£28,784	£8,700
Receipts per pass. journey	13·12d.	19·66d.	12·79d.	13·92d.	12·56d.	12·53d.	2·33d.	5·11d.	3·50d.
Workmen—									
Pass. journeys	26,479,695	1,772,949	3,584,920	7,109,537	5,622,938	256,794	243,774	6,781,520	250,242
Gross receipts	£394,184	£26,838	£59,811	£117,818	£93,851	£4,383	£2,118	£76,694	£2,169
Receipts per pass. journey	3·57d.	3·63d.	4·00d.	3·98d.	4·01d.	4·10d.	2·09d.	2·71d.	2·08d.
Other—									
Pass. journeys	3,065,522	364,417	671,776	933,144	621,086	25,985	49,207	334,181	8,519
Gross receipts	£308,899	£45,308	£73,821	£117,418	£61,939	£3,360	£326	£3,114	£163
Receipts per pass. journey	24·18d.	29·84d.	26·37d.	30·20d.	23·93d.	31·03d.	1·59d.	2·24d.	4·59d.
Total—									
Pass. journeys	90,945,200	5,822,249	12,199,737	19,832,949	15,649,708	637,776	510,825	32,920,723	925,771
Gross receipts	£3,145,275	£385,031	£604,315	£947,393	£678,388	£27,518	£4,717	£434,946	£12,257
Receipts per pass.	8·30d.	15·87d.	11·89d.	11·46d.	10·40d.	10·36d.	2·22d.	3·17d.	3·18d.

* All standard gauge railways

† Includes passengers originating on the railway undertakings, and on the Whitechapel and Bow Joint Railway

ASBESTOS WEARING SURFACES FOR LOCOMOTIVES AND ROLLING STOCK

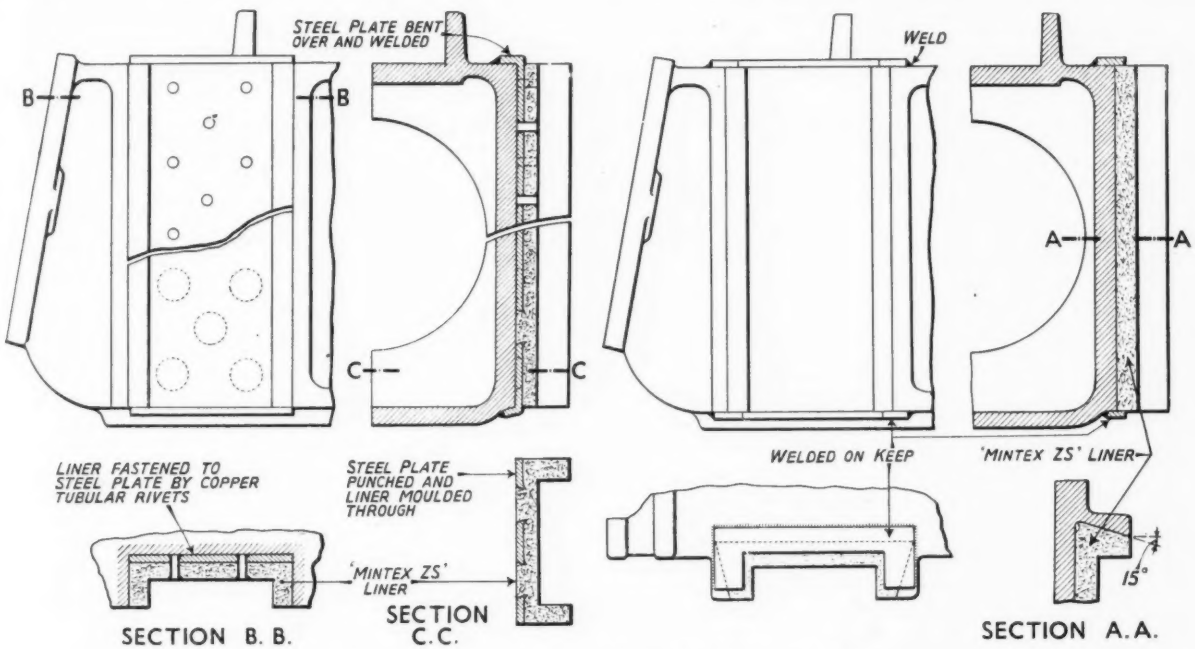
New type of self-lubricating liners and bushes, for which many advantages are claimed

CONSIDERABLE scope exists for improvement in materials which have to resist frictional wear; much experimental work has been done in this connection with railway rolling stock, in which the replacement of wearing surfaces is still one of the major problems of maintenance. The fact that a whole range of asbestos anti-friction liners and bushes is now available for replacing metal wearing surfaces working at low rubbing speeds is therefore of considerable interest. These liners and bushes, which have very high resistance to wear, are being fitted experimentally by railways in various parts of the world. Their manufacture is the outcome of many years of experimental work at the Cleckheaton laboratories of British Belting and Asbestos Limited, and actual running tests over a period of seven or eight years have proved their efficiency.

This firm's range of anti-friction products embraces several different types of material. One of them, known as Mintex ZS, is specially recommended for dusty, unlubricated conditions, and consists of a synthetic-resin dressed asbestos fabric of extreme rigidity. It is woven with a soft zinc alloy wire which acts as a solid lubricant. Another product, Mintex-Halo, is supplied for applications where a circular form is required, and Mintex-Fibre S, a cotton base material with a friction of 0·6, can be fitted as bolster rubbing plates to provide a damping action on the bolster movement. Centre pivots and side bearers with higher friction than normal, are available for use where added damping control is called for.

The chief demand for asbestos liners is met with in such countries as India, where rolling stock operates under dusty conditions, and native labour is chiefly employed for maintenance. In these circumstances, wear of moving parts is inclined to be excessive, and this probably explains why so many of the railways are fitting or experimenting with asbestos anti-friction liners. The principal applications for the B.B.A. range of anti-friction products are bolster pivots, side bearers, and rubbing plates; also axlebox side and face liners. They are also applicable at many other points where lubrication is difficult and dry seizure may occur. Where these asbestos-base materials are fitted, lubrication is unnecessary, and the manufacturer claims that the Mintex ZS quality, working dry, will give equal service to metal-to-metal surface contacts operating under average railway conditions of lubrication. By the incorporation of various solid lubricants, the liners can be supplied with friction values ranging from 0·1 to 0·6 (unlubricated), to suit specific applications. Their resistance to wear is further increased by lubrication in cases where oiling is convenient, the materials being guaranteed not to swell or soften under the action of oil.

Like most of the synthetic-resin dressed fabrics, they are extremely rigid, and capable of withstanding very high pressures. The experience gained with modern brake linings, especially of the zinc wire type which has virtually eliminated wear or scoring of the brake drums on road vehicles, is of considerable interest in regard to rolling stock wear problems. For example, an asbestos liner fitted to an axlebox would cut out wear on the horn cheeks, and thus confine replacement to the asbestos faces, thereby greatly reducing maintenance costs, which should prove one of the most important advantages offered by these materials. These faces may be combined with the softer grades of steel with excellent results, while a further advantage is that melting or distortion of face or side liners cannot take place should a hot box occur. Mintex ZS and



Diagrams of suggested methods of securing axlebox side liners

XUM

Mintex-Halo weigh only 0·068 and 0·047 lb. per cu. in. respectively, compared to 0·28 for manganese steel and 0·26—0·38 for white metal.

Fitting, we are informed, presents no undue difficulties; plates and axlebox side liners, for instance, are usually attached by means of brass tubular rivets. This, though somewhat contrary to railway practice, has been found by experience eminently satisfactory. Where clinching of the rivets presents difficulties, set screws are used.

While tests in such countries as India or Rhodesia are of value, it is interesting to note that the home railways are also carrying out trials. The L.M.S.R. has equipped several engines with Mintex-Halo bolster side bearer discs, and on the Northern Counties Committee of the same railway, Mintex ZS axlebox side liners are being tested on locomotives. Some of the carriage vestibule gangway wearing washers have also been replaced by the same material.

The Egyptian State Railways are specifying Mintex-Halo oil-impregnated bushes on the brake rigging of 20 third class bogie carriages at present on tender. One of the most interesting trials carried out to date is being made by the Rhodesia Railways. Here Mintex ZS side bearer liners have been fitted by the Metropolitan-Cammell Carriage & Wagon Co. Ltd. to Sheffield patent bogies under high-sided wagons; a parallel test is now being made between some bogies fitted with pressure grease lubricated metal side bearers, and 20 with unlubricated side bearers lined with Mintex ZS.

The Crown Agents for the Colonies are also investigating the possibilities of this type of material, and 22 bogies on the Federated Malay States Railway were equipped last year with centre pivots and side bearers; they have since ordered Mintex liners for other applications. The drawings on the previous page show suggested methods of securing asbestos side liners in railway vehicle axleboxes.

ARC WELDING IN INDIAN STATION ROOFING

Up-to-date station roof construction on the North Western Railway

(*See illustrations on pages* 1167-8)

As originally built many years ago, the broad-gauge part of Kalka station consisted of one terminal passenger platform, with a roof spanning this single-faced platform and two running lines. This roof consisted of a number of transverse roof girders supporting a series of arches of corrugated iron sheets.

This arrangement served its purpose well for many years; but, with a rapidly increasing growth of traffic to India's summer capital—to which reference is made in an editorial note on page 1151—it became necessary to extend the platform accommodation. An additional platform was built on the far side of the passenger shed; but, by reason of the position of the wall supporting the roof, it was impossible to make use of the second line for passenger traffic where it ran under the shelter. So, for many years, the new platform remained without protection from the weather. As most of the broad-gauge trains arrive at Kalka in the early hours of the morning and the departure times are long after sunset, this inconvenience was not so serious as might at first be imagined.

However, in 1936 it was decided to remove the old roof and its inconveniently sited wall and at the same time to provide adequate protection on all the three platforms. Designs were put forward for a shelter 500 ft. long on the single-faced main platform and another and wider shelter 700 ft. long on the double-faced platform.

The design of these shelters is of special interest. In THE RAILWAY GAZETTE dated July 16, 1937, we published a description of the use of electric arc welding on bridges and allied structures on the Indian N.W.R., and reference was made to a special triangular-section all-welded purlin evolved by the Standards Office of the Railway Board; one of these purlins was made up in the N.W.R. bridge workshop at Jhelum and was tested to destruction, as illustrated in that article. With certain minor changes in the size of scantlings, this type of purlin has now been adopted as part of the standard design, and the shelters at Kalka are the first of their kind embodying this purlin to be erected on the N.W.R. As a result of using this light-weight welded purlin, it has been possible to produce an excellent form of umbrella roofing with columns and brackets of ordinary riveted construction, spaced 50 ft. apart and well back from the edge of the platform. As will be seen from the illustration on page 1167, adequate protection from the weather has also been achieved with a minimum of interference to platform space. The appearance is further enhanced by the painting of the steelwork with aluminium paint.

The contract for the supply of the steelwork and galvanised corrugated iron sheeting for the shelters at Kalka was let to Herman & Mohatta, engineers, of Karachi and the erection at site was carried out by the staff of the Bridge Department of the N.W.R. Similar shelters have since been erected at Delhi, Khanalampura (the interchange goods station for the E.I.R. and N.W.R. near Saharanpur) and for a new passenger shelter at Karachi City station.

In the latter instance, however, the design of the triangular purlins has been modified. The two main angles at the top and single T for the lower flange have been replaced by three 3-in. × 3-in. × $\frac{5}{16}$-in. angles, and the bracing instead of being short pieces of angle, is in the form of continuous bent round bars $\frac{3}{4}$-in. in diameter. The bars are connected to the angles by $\frac{1}{4}$-in. fillet welds, making a simple, economical and efficient purlin. Each purlin has a camber of 1 in., and was shop-welded in two parts and erected with a bolted field joint at the centre. Structural grade coated electrodes were used in the electric-arc welding, which was done entirely by Indian labour in the shops of the Bridge Department of the North Western Railway, which also carried out the erection of the whole structure at Karachi City.

The columns supporting the roof at that station are in pairs and are 19 ft. apart transversely to the 45 ft. 6 in. platform, and 50 ft. apart longitudinally. The structure, covered with asbestos-cement corrugated sheeting, has a total spread of 47 ft. 6 in. including valance sheets; 6-in. diameter cast iron down-pipes are arranged inside the columns. As it is exposed to the corrosive sea-breezes at Karachi, all the steelwork has two primary coats of a mixture of red-lead and graphite, with final coats of aluminium paint on all parts 5 ft. above platform level. The two last illustrations (page 1168) depict the Karachi City modified roofing.

The use of electric-arc welding construction for station roofing is further evidence that the Indian railways are alive to the trend of design of modern structural steelwork and that even before the issue of the recommendations of the Wedgwood report, the North Western Railway, at least, was well to the fore in the use of welding.

NEW STEEL PASSENGER COACHES FOR CHINA

British-built vehicles for the Chinese National Railways incorporating noteworthy features including anti-telescoping ends

THE Birmingham Railway Carriage and Wagon Co. Ltd. has recently completed, to the inspection of Messrs. Sandberg, an order from the Chinese Government Purchasing Commission for 34 steel coaches of different types intended for service on the Canton-Hankow line of the Chinese National Railways. The coaches have been paid for out of the loan for the completion of the Canton-Hankow line obtained in 1933 by the Chinese Ministry of Railways from the Board of Trustees of the British Boxer Indemnity Fund.

Together with 16 third class sleeping cars previously ordered, these new coaches complete five all-steel express trains designed to run between Hankow (Hsuchiapang) and Canton (Wongsha). The normal composition of each train is one mail and baggage van, four third class sleeping cars, one dining car, one second class day car, one second class sleeping car, one first class sleeping car, and one baggage and guard's van.

The cars are of thoroughly up-to-date design, and are especially notable for the following features, described in detail later:—

(*a*) Anti-collision precautions, particularly the anti-telescoping posts and beams (integral with the steel bodies on these cars, but also a feature of wooden-bodied cars used in China on secondary lines).
(*b*) All-steel vestibule gangways.
(*c*) A system whereby slack in the standard M.C.B. couplers is automatically taken up.
(*d*) Design of the third class sleeping cars.

The sleeping and day coaches are of the end-entrance type and have the following leading dimensions:—

Width over body sides		10 ft. 1¼ in.
Height: rail to centre of coupler		3 ,, 6⅛ ,,
,, rail to floor		4 ,, 8 ,,
,, rail to top of roof		14 ,, 9 ,,
Length: overall (gangway face-plates)		74 ,, 6⅛ ,,
,, body		72 ,, 6 ,,
,, between bogie centres		51 ,, 10 ,,
Bogie wheelbase		8 ,, 0 ,,
Journals		10 in. by 5½ in.
Wheel diameter on tread		3 ft. 3⅜ in.

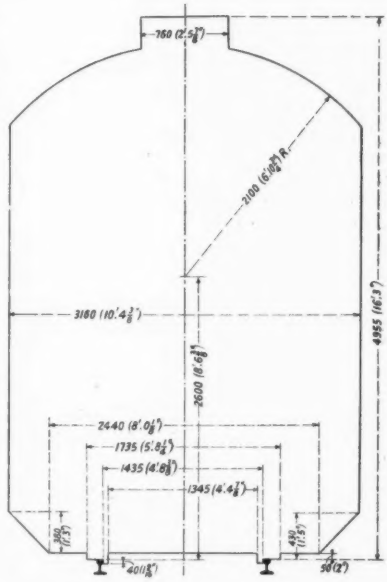
The dining cars, mail, baggage, and guard's vans, having no end entrances, are 68 ft. 11⅝ in. overall, and 66 ft. 7⅝ in. over body. The distance between bogie centres is 48 ft. 6⅝ in.

The floor height of the cars, believed to be the highest in the world, is rendered inevitable by the coupler-height and the necessity of providing a clear space of not less than 4 in. between the top of the coupler casting and the lower edge of the gangway face-plate in order that the cars may enter and leave the Yangtse train ferry without damage.

The bogies are of the Ministry of Railways standard design, of the 4-wheel, equalising beam, swinging bolster type with Isothermos boxes, triple-helical coil springs on the equalisers, and quintuple full-elliptic bolster springs. The swinging links are fitted with adjusting screws in order to allow of easy correction of the coupler height.

The underframe and body, being all-steel, are made integral and form a box girder. By this construction trussing of the frame is eliminated and other weight saved, while the vehicles are rendered proof against all ordinary impacts.

The specification called for cars capable of withstanding buffing stresses up to 100 tons (metric) without crushing, and the construction secures this. The draught-gear is of the Bradford rocker type with the Farlow two-key attachment to the frame blocks. Pivoted-head couplers, to allow of easier coupling on curves, are also fitted. (As the foregoing items were not obtainable in England of British make one set only has been fitted, and the remainder will be bought in China, with other than Boxer Indemnity funds which require British manufacture except in special cases.) Westinghouse air brake with 3½-in. improved triple valves, separate reservoirs, and 16-in. cylinders (14-in. on the baggage cars) are fitted, and automatic slack adjusters are used. The brake beams are of trussed H section with integral brake-block carriers, and the blocks are removable by the withdrawal of a single pin. Alarm signals are provided in all cars.



Chinese National Railways standard loading gauge

Gresham and Craven's Vapor type of steam-heating has been installed. In this system a thermostatic regulator is carried beneath the car which automatically adjusts the internal to the outside temperature, thus compensating for heat loss through radiation in extreme weather. The lighting and fan installation is of the latest type and is manufactured by J. Stone & Co. Ltd. Fool-proof connectors are fitted throughout.

The general construction of the coaches is shown in the drawings; light pressed members and rolled sections are used. The floors of all vehicles, except the vans which have slatted wood floors, are composed of dove-tailed steel sheets with fireproof flooring composition. Carpets are provided in the first class and dining cars, and the kitchens have removable slat frames on the floor. Beclawat balanced metal window frames, of a size to take standard glass, running in felt-lined grooves are fitted. Where the interior arrangements permit, they are arranged in twin form and, together with a sliding top ventilator light, grouped in an Alpax window frame. The window glasses on first and second class cars are supplemented by gauze mosquito-proof screens in aluminium alloy frames, and roller blinds are fitted. The equipment includes Airvac roof ventilators, which have given much satisfaction in China.

The mail and baggage vans are divided into a luggage compartment, an office, a mail compartment, and a lavatory, with a side-corridor running the length of the car. The interior finish is entirely of steel and the car is, in

consequence, completely fireproof except for the floor. Perhaps the most interesting vehicles in the trains are the third class sleeping cars, the design of which is based on Trans-Siberian practice, and no fewer than 69 passengers can either lie down or sit in them. The interiors are divided into nine open compartments, eight having six seats on one side of the aisle and two on the other, and the remaining half compartment three and two passengers respectively. On the wider side of the aisle the beds are arranged in tiers of three placed transversely in the car. In the daytime the lowest bed becomes the seat, the middle bed the seat-back, and the upper bed can either be folded downward or left to form a luggage rack. On the narrower side of the aisle two seats face each other in daytime across a small table. For night use the table is removed and the seats slide forward to form the lower bed, while the seat backs hinge upward and outward meeting at their outer ends thus forming the upper bed. No mattresses or bedding are provided. Had full advantage not been taken of the generous Chinese loading gauge this arrangement would have been impossible, but with these wide cars the sleeping accommodation is adequate for each passenger, though naturally he has less space than a first or second class traveller.

The dining cars are generally similar in design to those which have given satisfaction on the Shanghai—Peiping express services but with several minor alterations and improvements. The dining saloon seats 36 passengers at 12 tables with movable chairs. The walls are faced in mahogany with a flush finish to avoid dust collection, and the effect of the high walls and curved roof is to give an airy and spacious yet dignified effect. The kitchen has a coal-burning stove, complete with steam tables which can be heated from the train pipe when the stove is not in use. Refrigerators, ice boxes, and the usual receptacles are provided in kitchens and pantries. A coffee urn is fitted to the top of the stove with a supply pipe to the pantry.

The second class day cars, which are finished in teak, have a central aisle and twin seats on each side, with removable tables. Lavatories are provided at each end of the cars, as on all the passenger vehicles, except diners. Continuous all-metal parcel racks of large capacity traverse the length of the car on each side. The seats are well sprung and covered in green Rexine. There are five four-berth compartments in the second class sleeping cars, as well as two two-berth compartments, with a central wash-room and w.c.s at each end. The general layout of the compartments is not dissimilar to British third class sleeping cars, but in these cars the upper berths fold down to form seat backs for daytime use. The internal finish is in teak.

As with the second class cars, the firsts follow Chinese standard practice and have eight two-berth compartments with the usual attendants' compartment. Each passenger compartment has a transverse lower berth and a longitudinal upper berth, the lower berth forming a seat for three passengers by day, the back hinging downward, as in Indian practice to form a bunk by night. The upper berths are counterbalanced and hinge upward to the roof by day, providing convenient receptacles for bedding. Opposite the window end of the lower berth a seat is provided, with a folding table between. Adjacent to this seat is a toilet cabinet complete with folding wash basin, cupboard, mirror, shelves, and other accessories. A Westinghouse water heater is provided for the hot tap of each basin. A communicating door is arranged in the transverse partition between each pair of compartments, and there are the usual luggage racks and accessories.

The interior of the baggage and guards' vans is divided into a lavatory, a large luggage compartment, a guard's compartment, a trainmen's duty room, and a corridor running the whole length of the car. Access to the luggage compartment is by sliding doors, both in the car sides and the corridor partition. The guards' compartment has a lower and upper berth, with a table and cupboard in the opposite partition. The trainmen's duty room is arranged at the end of the vehicle and has body-side entrance doors on both sides, as well as access from the corridor. A cross bench is fitted to the partition, with a folding seat on the corridor side of the room and steel boxes in each body-end corner. The usual guards' brake-valve is fitted. All doors of this vehicle are fitted with locking bars and chains, while all windows are barred both inside and out.

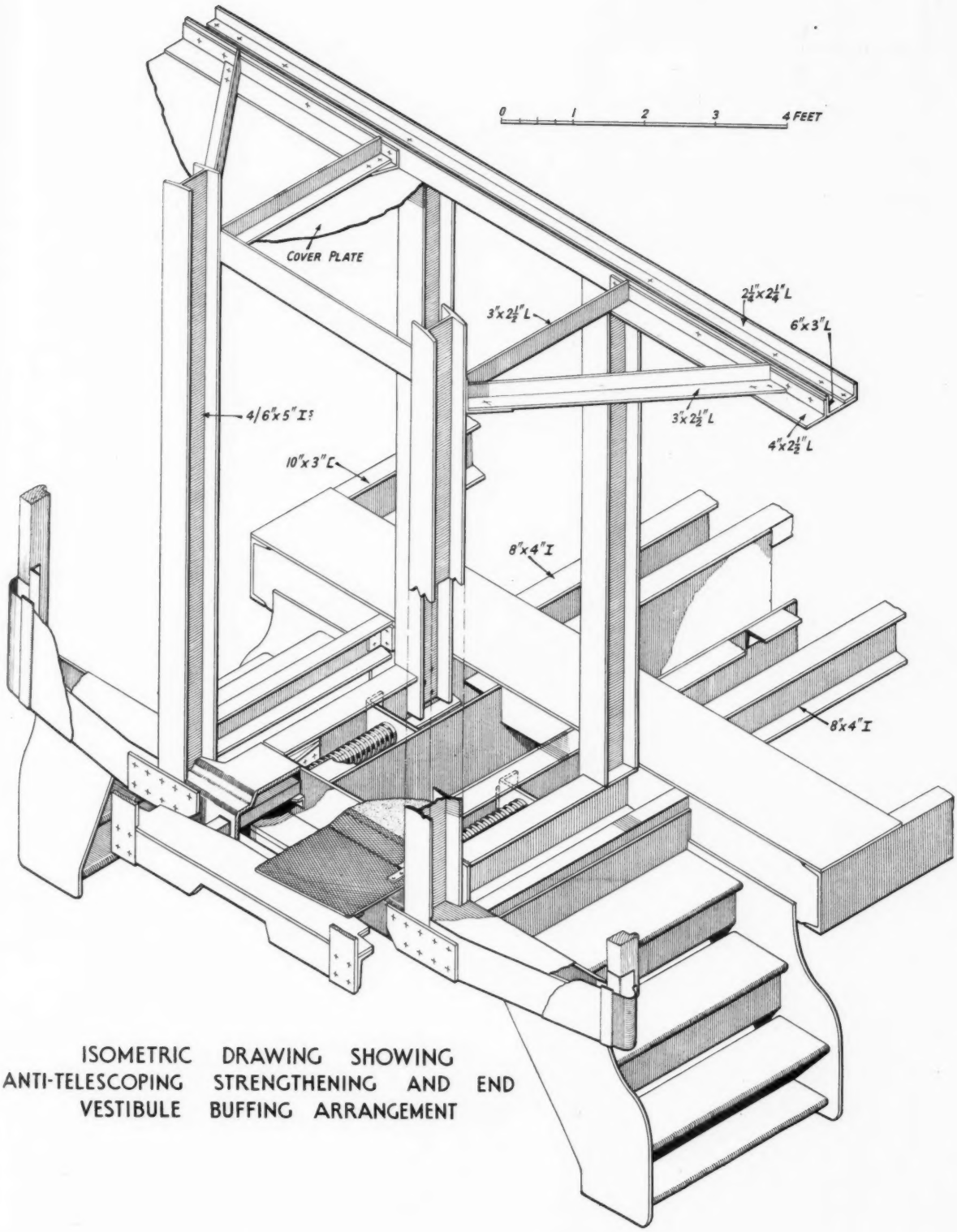
The exterior of the coaches is painted buff from cantrail to waist, and purple-brown below, separated by a blue waist rail. The lettering and numbering are in gold. Roof tanks are fitted to all cars except the first class and dining cars which have underframe tanks with Stone's water-raising apparatus. All tanks can be filled from roof or platform height.

Anti-Telescoping Equipment and Steel Gangways

All modern cars to the requirements of the Chinese Ministry of Railways are fitted with anti-telescoping posts and beams irrespective of whether they have steel or wooden bodies. The accompanying diagrams show the general principles involved. On cars with end vestibules, a 6 in. I-section pillar is placed on each side of the vestibule connecting gangway, its foot being an integral part of the built-up buffer beam, and its head braced at cantrail height by an additional pillar in the vestibule inner partition and also by the inner corner pillars. In steel bodies the body side itself also assists in bracing the anti-telescoping members. The use of these pillars effectively prevents one underframe over-riding and telescoping its neighbour, even when wooden bodies are used. The extra weight is, in a steel car, negligible, and in a wooden-bodied car less than two tons.

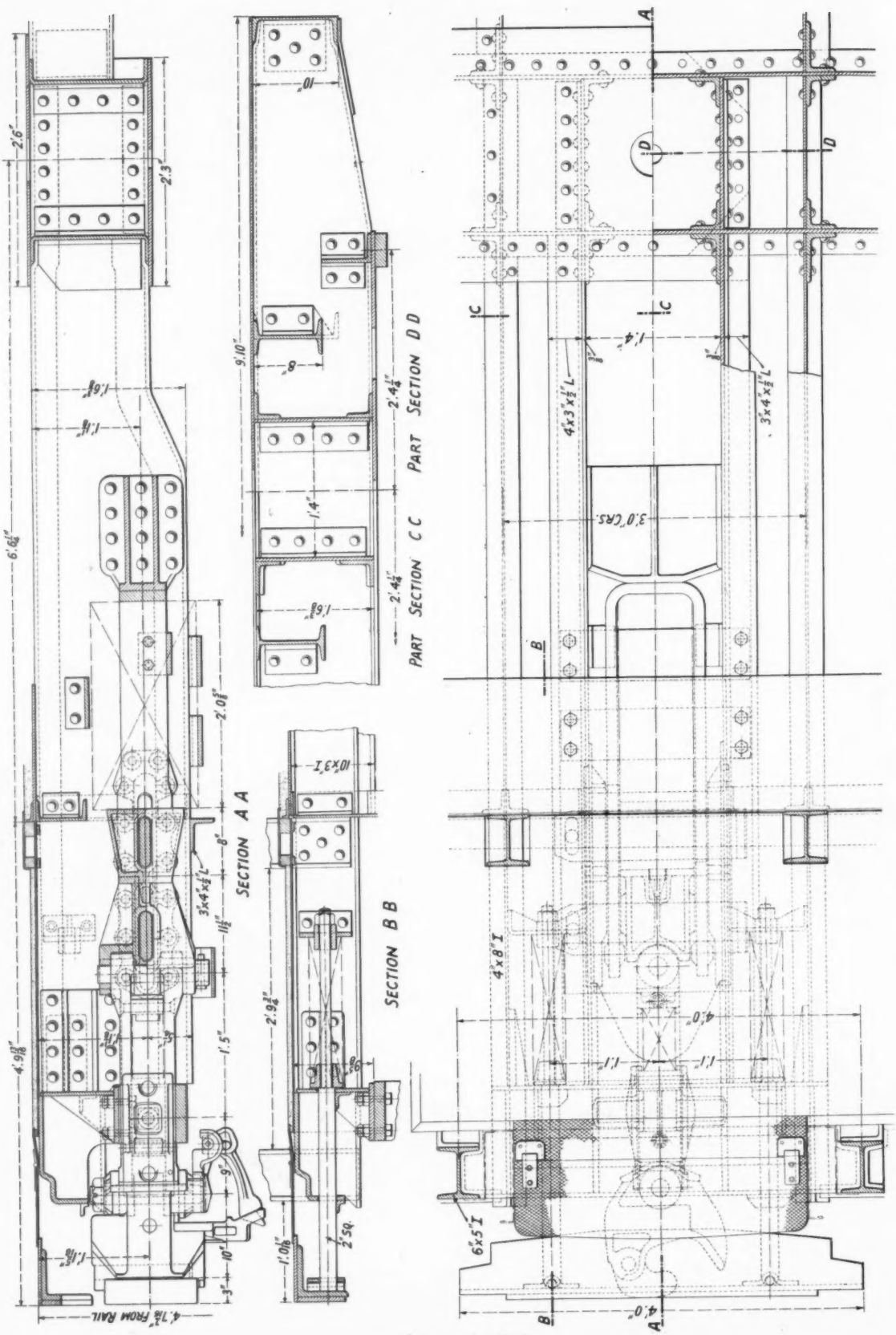
The vestibule gangways are of the Pullman type, but instead of the flexible bellows ordinarily fitted are of all-steel construction. The face-plate has a hood on its inner side, the inner edge of which penetrates a U-shaped annular cavity, thus giving the necessary flexibility. This construction is not perfectly air-tight, but in practise the draughts are not perceptibly greater than usual. The use of these steel vestibules has been found, in China, to reduce maintenance costs considerably, while the extra cleanliness possible is another advantage. The spaciousness of the gangway, which is over 3 ft. in width and 6 ft. 9 in. in height should be noted. The fact that, when coupled, the gangway passage is less than 2 ft. in length combines with the spaciousness to make it difficult for the passenger to realise that he is actually passing from one car to another.

With the M.C.B. coupler a certain slack must always exist between knuckle and body which, with unskilful driving, can easily cause discomfort to passengers. The use of Pullman vestibules with strong springs or friction buffers can obviate this by keeping the coupler knuckle faces in contact. To use such strong springs with the usual side plungers has often the disadvantage that it makes coupling on curves difficult. In consequence it is usual in the United States to use three plungers, the central one having a strong spring or friction buffer, while the springs of the outer plungers are for centring the gangway only. The low coupler height standard in the U.S.A. provides sufficient space for this centre plunger above the coupler. In China, however, where the European coupler height is used, the limited distance between the coupler and the floor makes the fitting of this additional plunger difficult. Furthermore certain lines in China have their buffer

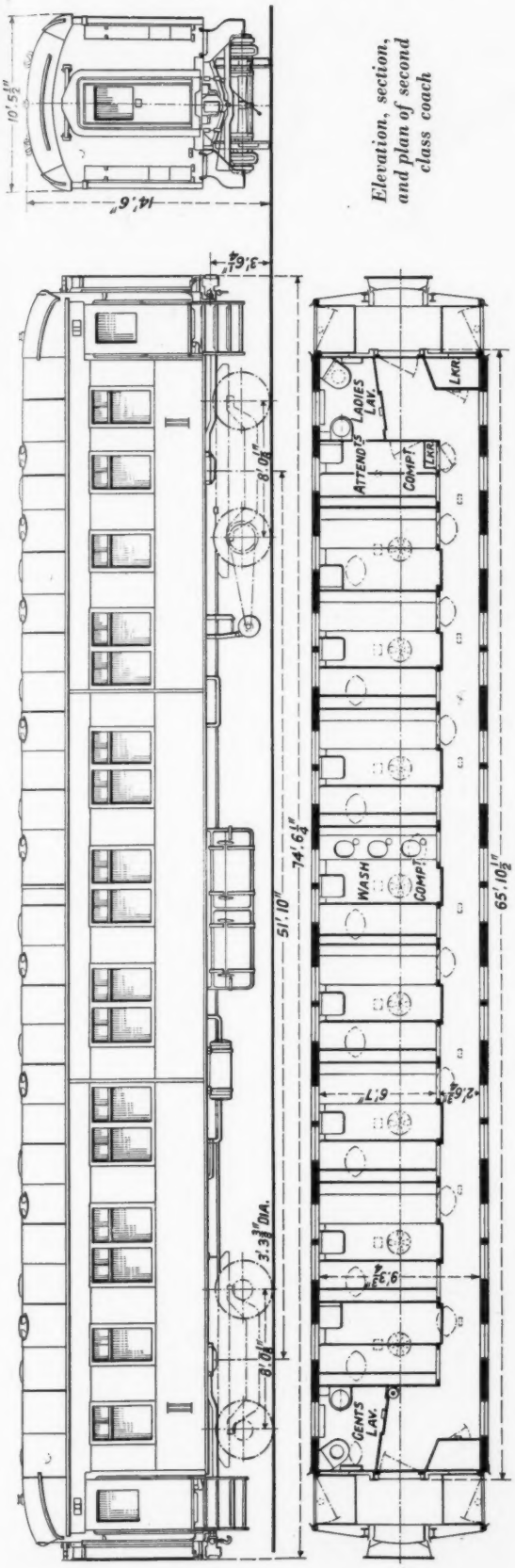


ISOMETRIC DRAWING SHOWING ANTI-TELESCOPING STRENGTHENING AND END VESTIBULE BUFFING ARRANGEMENT

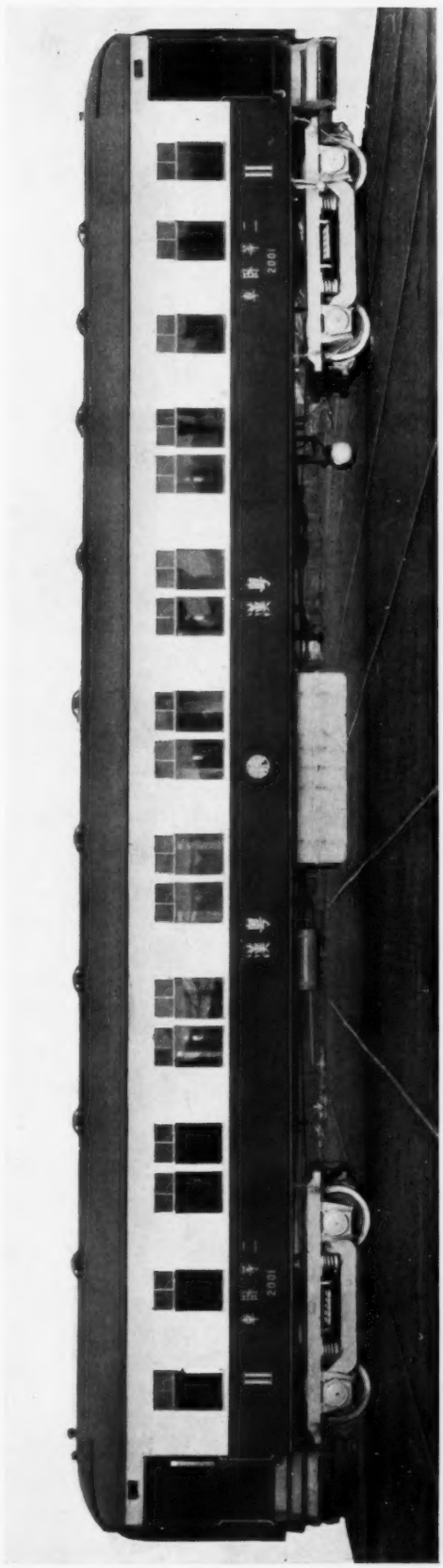
NEW STEEL PASSENGER COACHES, CHINESE NATIONAL RAILWAYS



Details of buffing and coupling arrangement and anti-telescoping equipment



Elevation, section, and plan of second class coach



Second class coach, typical of the appearance of the new stock

NEW STEEL PASSENGER COACHES, CHINESE NATIONAL RAILWAYS

Second class day car

Luggage and guard's van

plates below instead of above the coupler, the Pullman-type vestibule face-plates being extended downwards and secured to these plates. Strong pressure above the couplers would bend this latter type of gangway, and, pending their conversion, the use of strong vestibule springs is impossible.

In consequence, the arrangement fitted to the present cars is a transition or primary arrangement which can couple to all types of vestibule without damage, the springs being comparatively weak. As soon, however, as conflicting types of gangway have been eliminated, it is the intention to modify the present arrangement by installing a secondary spring gear consisting either of a pivoted laminated spring, or of a pivoted cross beam having its ends resting on the ends of the side plungers and its centre connected to a friction buffer placed behind the coupler and draught-gear. This buffer will come into action only during the last 1 in. of the rearward travel of the plungers prior to the couplers engaging, and the momentum of the cars will thereby couple the cars against the pressure of the buffer without perceptible shock to the passengers, and at the slowest speed.

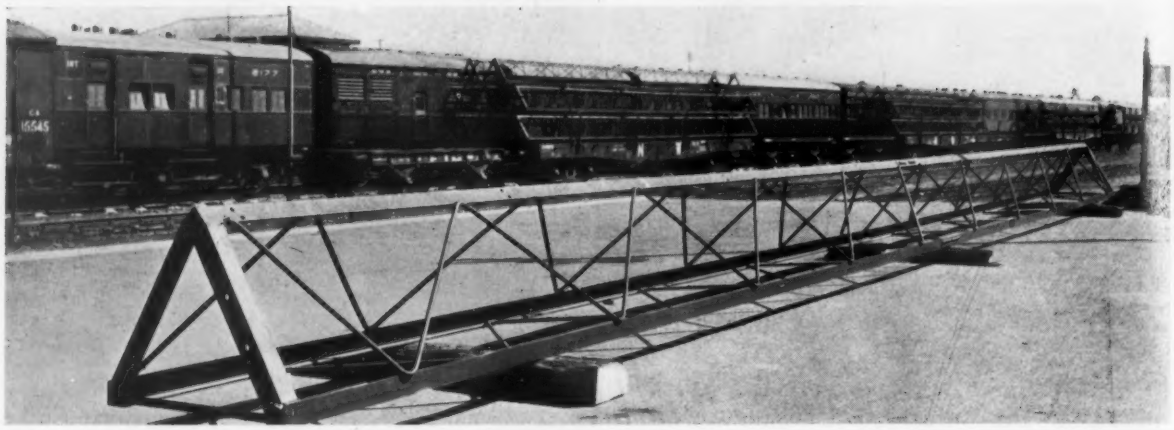
WAR HAVOC ON CHINESE RAILWAY

Taierhchwang changed hands several times during the recent bitter fighting for Suchow, and the South station serving the town sustained extensive damage after a 13-days engagement, and, as the illustration on the left shows, was reduced to ruins

The old form of roofing spanning the main platform and two tracks : (left) view of interior showing main platform and details of roof, and (right) outside view with main platform on extreme right

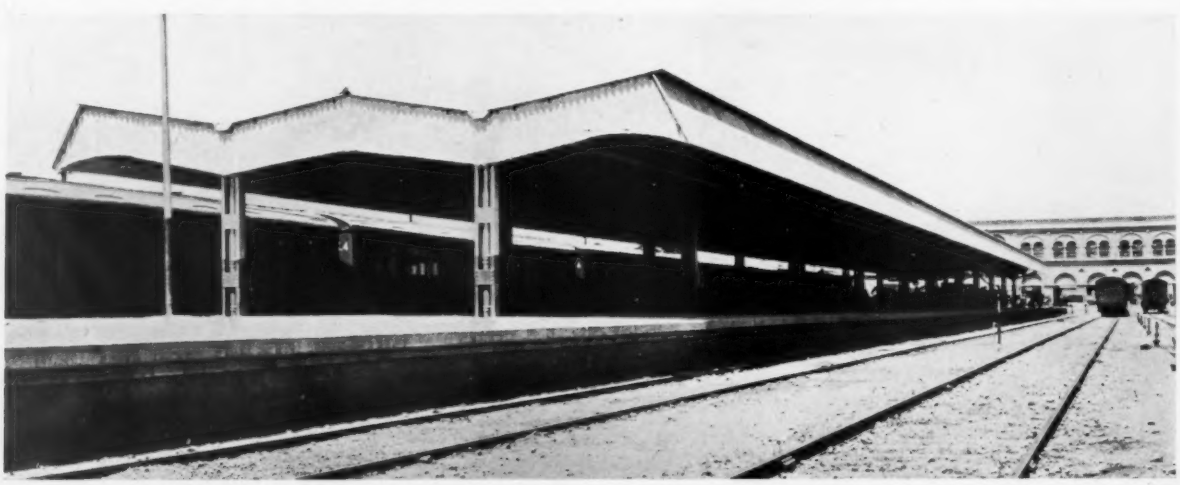
Views showing the corresponding new roofing over (left) the main, No. 1, and (right) Nos. 2 and 3 platforms, 500 ft. and 700 ft. long respectively. Note the four and five rows of all-welded triangular purlins with angle bracings

ARC WELDED ROOFING AT KALKA, N.W.R., INDIA (*See page* 1160)



One of the newer type of all-welded purlins with continuous round-rod bracings, lying in an inverted position ; note the three bogie truck loads of purlins in the background

Platform shelter, with the first four bays under erection ; there are seven rows of purlins of the pattern shown above



Platform shelter as completed ; it has an overall width of 47 ft. 6 in., including valance sheets

LATEST TYPE OF ALL-WELDED PURLIN AT KARACHI CITY, N.W.R., INDIA

(*See page* 1160)

SIGNALLING AT THE GARE DE LYON, PARIS

An interesting example of route-lever working

DURING the last few years an extensive re-arrangement of the track layout has been in progress at the Gare de Lyon, the Paris terminus of the Paris, Lyons and Mediterranean Railway*; at the same time the signalling has ben changed over in stages from mechanical to all-electric, controlled from two cabins—actually housed in one building—by the latest form of Bleynie-Ducousso route-lever apparatus. The Gare de Lyon was opened in 1849 when the line was completed as far as Montereau, and in 1862 consisted of one arrival and one departure platform, with 4 tracks between. In 1867 the departure platform was lengthened, and in 1878 a centre platform was added. In 1879 another platform was constructed on the eastern, or departure side, outside the covered portion, giving two departure and two arrival platform lines under cover and one outside, a situation which still existed in 1891, when it was proposed to rebuild the station in readiness for the exhibition year 1900. The traffic steadily increased year by year, as the following figures show:—

1872 ..	1,413,000 passengers	1892 ..	2,518,000 passengers
1882 ..	1,864,000 ,,	1896 ..	3,259,000 ,,

Late in 1891 the company submitted proposals for rebuilding, but it was not till April 25, 1894, that the necessary authority was given by the Government, work being begun on August 1, 1895, at first on the necessary street alterations and similar operations in the vicinity. The near approach of the exhibition year, when the traffic was certain to be very heavy, made it essential to get the principal alterations finished by that time. The new layout comprised 7 platforms, accommodating 12 lines under the roof and one outside, with one intermediate line having no platform on the down side. The plan of having departure and arrival sides was continued, but, as usual in French stations, a liberal use of double slip points enabled almost all the lines to be used for arrival or departure if necessary.

The enlargement of the station took place principally on the western side, and the offices and service rooms were entirely re-arranged. The work was not finished by the time the 1900 Exhibition opened, but all the new lines were available. It cost fr. 20 million, fr. 750,000 being for the new signalling arrangements, which were entirely mechanical. The station remained substantially in this condition until 9 additional platforms were added on May 15, 1927, on the east side for main line departures, which form a very important item in the working, owing to the groups of expresses, with connections to many parts of Europe, which are sent off every evening. In 1930 over 14,000,000 passengers were handled, the maximum number of trains in one day at the height of the holiday season being 284. There were then six main lines outside the station, down fast and slow, up fast and slow, down and up goods, with two extra lines to and from the carriage sidings at Conflans. The six main lines continue as far as Villeneuve-St. Georges, an important junction and marshalling station, with four lines thence through Laroche to St. Florentin, 107 miles from Paris.

The working, prior to the recent modifications, was concentrated in a large cabin, known as No. 1, containing a 200-lever Saxby frame, working 123 points, 38 signals, 13 route indicators, and controlling 310 distinct movements, supplemented by a small cabin, No. 1 *bis*, controlling seven lines on the eastern side only. This worked 6 points and 8 signals, for 14 movements, and had a Vignier type frame. The block was the P.L.M. lock-and-block, type No. 3, and the sections outside were arranged to give a five minute headway. The Gare de Lyon has also a train despatcher's head office.

Introduction of Power Operation

In 1933 a start was made with the substitution of power for mechanical signalling, and the re-arrangement of the tracks, to provide greater freedom of movement and increase the capacity of the station. The work was completed on April 10, 1935, after 31 stages had been gone through, in 4 groups. The first application of electricity to point operation on the P.L.M. was made in 1898 at a box near the Gare de Lyon, and this was followed by larger installations at Villeneuve-St. Georges, the Rodary mechanisms being used. At first the individual lever system was followed, but later on the company adopted the route lever method, using the Bleynie-Ducousso mechanical combiner frame, and installed it at Lyons, Dijon, and Melun. The same apparatus, modified and improved, has been selected for the Gare de Lyon and provided by the French Thomson-Houston Co. under the direction of Monsieur A. Héritier, the company's Signal Engineer, and to the satisfaction of Monsieur J. Boillot, Technical Supervisor acting for the railway company.

The two diagrams, Figs. 1 and 2, show the layout of the lines before and after the alterations, and it will

* Now the South Eastern Region of the French National Railways

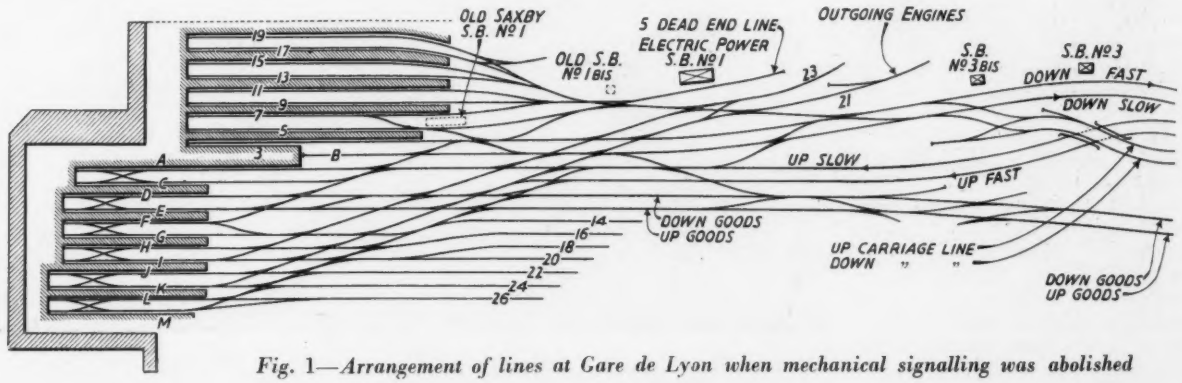


Fig. 1—Arrangement of lines at Gare de Lyon when mechanical signalling was abolished

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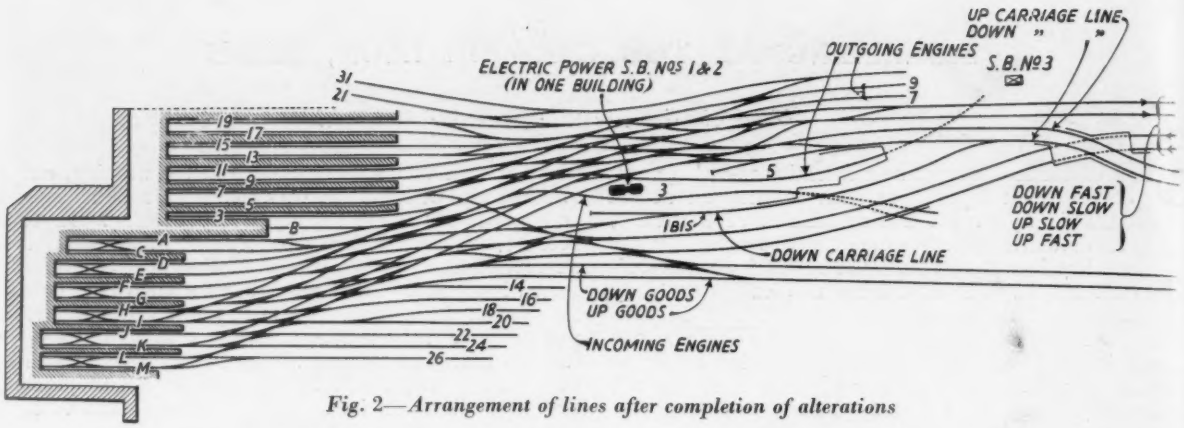

Fig. 2—Arrangement of lines after completion of alterations

be seen how the access to the platform lines laid down in 1927 has been extended to facilitate simultaneous movements. A direct connection has also been made to the outgoing carriage line from the old part of the station, which avoids interference with the remaining lines, and a new connection, to the locomotive depot, passing under the down fast and slow lines. At the same time an increased number of double slip switches was put in, and this made it difficult to retain mechanical signalling, the frequent modifications of which would have been very awkward to effect. Power signalling was therefore necessary, but had the individual lever system been adopted the various stages would have involved tedious interlocking alterations, which the route lever system largely avoids. The choice fell therefore on the latter.

The scheme adopted was to have two locking frames, called for convenience Cabins I and II, but in one building, the former dealing with the area previously controlled by the Saxby box, and the second the area, now much enlarged, controlled by the Vignier type box. The new building was therefore erected in a vacant space available, as marked in Fig. 1, and Frame I constructed, large enough to do the work of the two old mechanical frames, enabling them to be done away with before the track alterations on the east side, to be controlled from the new Frame II, were carried out. To facilitate the change the points were first equipped with electric motors, operated by contact makers on the mechanical levers, with electric locks for normal and reverse indications, and the mechanical signals were replaced by colour-light units. All the old wires and rods were then cleared away. The only exception to this was the point operation at the little No. 1 *bis* cabin, which remained mechanical.

The Change to Route Lever Working

This was begun on the morning of June 18, 1933, when Frame I being complete and tested, the circuits were transferred to it, and the last remaining mechanical points of No. 1 *bis* cabin were coupled up to motors. As soon as all was in order and working satisfactorily, the old boxes were demolished to make space for the track alterations, and the whole of the working was for the time being directed from Frame I. Meanwhile Frame II was being got ready. A small temporary cabin, also fitted with route levers and called Cabin M, was set up to deal with the provisional junction between the old and new down fast, down slow and up and down carriage lines. The working of the nine eastern platform lines and the new sets of slip points was progressively transferred from Frame I to Frame II and Cabin M, until the bringing into use of the new running lines enabled the latter to be removed.

The final arrangement is seen in Fig. 2. Frame I controls 106 pairs of points, 50 signals, 16 indicators, and governs 232 separate movements by means of 132 route handles. Frame II controls 89 pairs of points, 29 signals, 27 indicators and 119 movements by means of 81 route handles. (Frame I now has a large number of spare handles, originally provided to meet the temporary situations). There is necessarily a certain amount of electric control between the two frames.

Technical Details of the New Work

The two frames, forming *Poste I* and *Poste II* are, as stated, placed in one building, made of ferro-concrete (Fig. 3) in four storeys. The ground floor contains the terminations of the incoming cables and the distribution of their conductors to the various local wiring circuits.

Fig. 3—New signal box containing the two frames in " Poste I " and " Poste II "

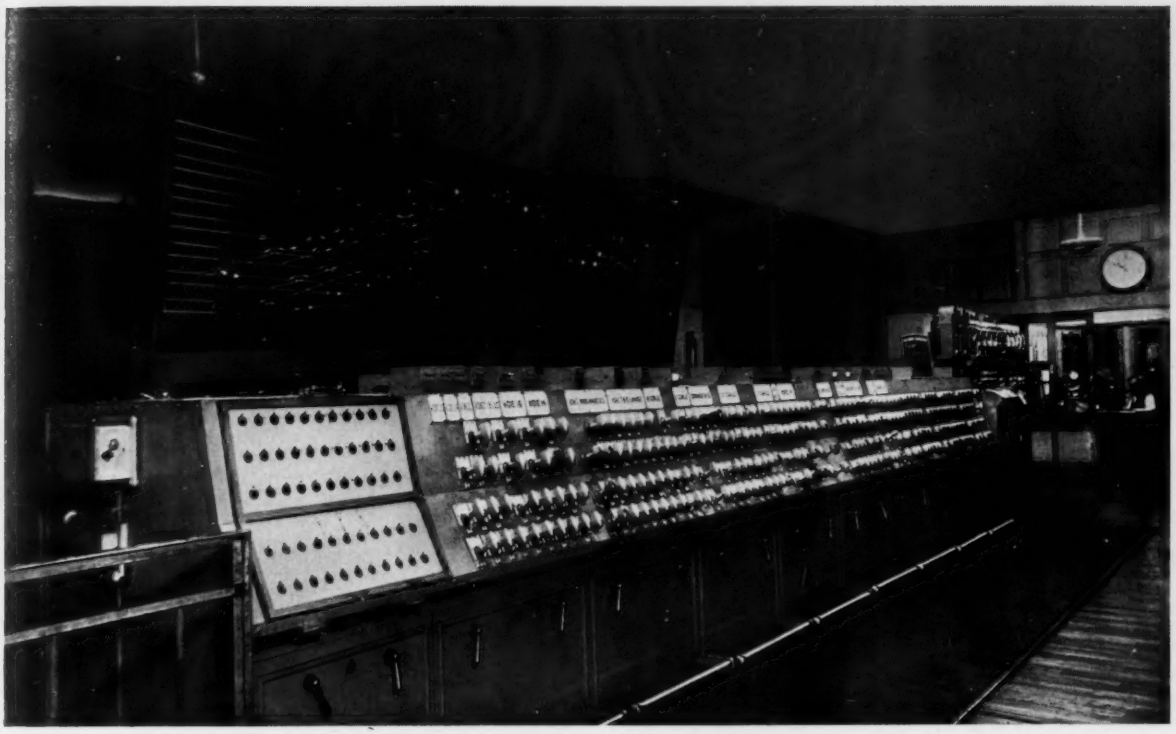

Fig. 4—Route lever frame No. 1. On the right is the block and train describing apparatus

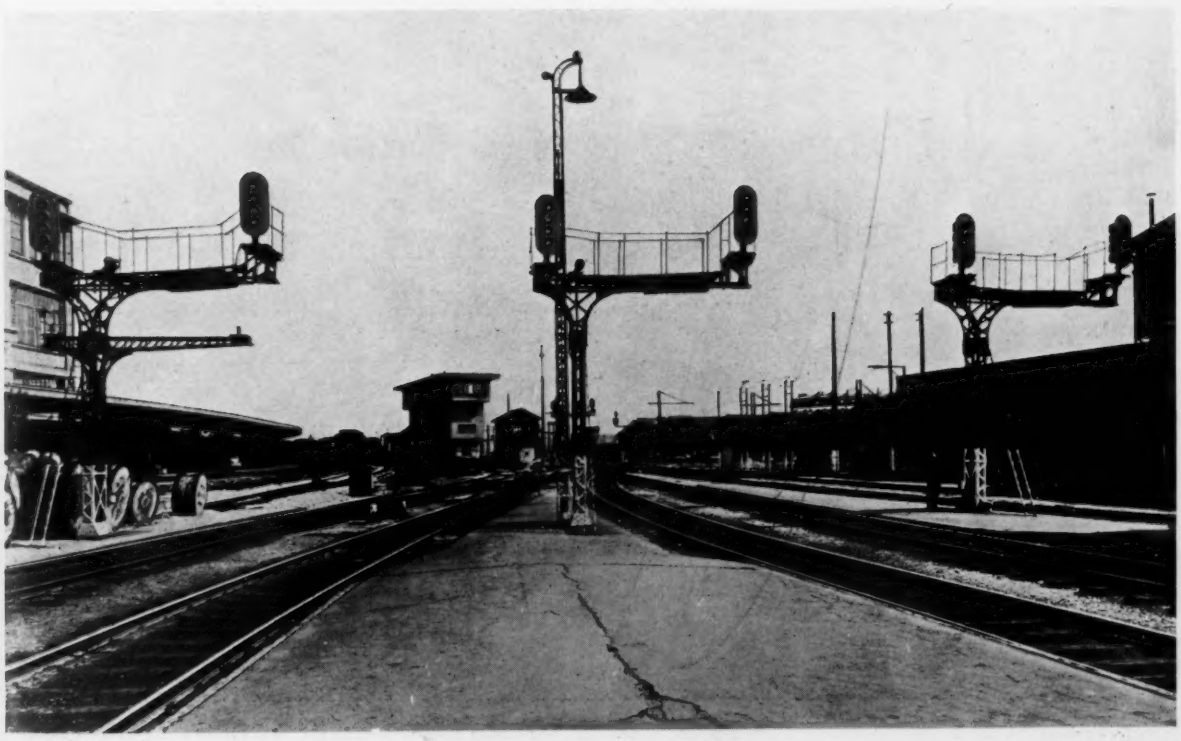

Fig. 5—Platform starting signals

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Fig. 6—General view of approach to Gare de Lyon looking from the arrival platforms, with express goods station in the left background

Fig. 7—General view looking towards the station. Arrival platforms below clock tower, main-line departure platforms behind signal box and express goods station on right

Lead covered dry-core cables are used for some circuits, for which an air drying plant is installed on this floor, and lead covered impregnated paper cables for others, all being armoured. The 220-V. a.c. three-phase and 120-V. d.c. supplies enter at this point, with the necessary switchboards, from which any circuit can be disconnected. The first floor contains the relay room and a special device called the geographical table, which is a plan of the various routes in metal mounted on an insulating base, the gaps at each pair of points being bridged by the respective control relay energised. This table enables a fault in a route, due, say, to a pair of points not having closed, to be found with the minimum of delay. All circuits on this floor are fused.

On the second floor the transformers are placed, which receive the 220-V. 3-phase supply and provide 3 single-phase 120 V. feeds for the colour-light signals and various

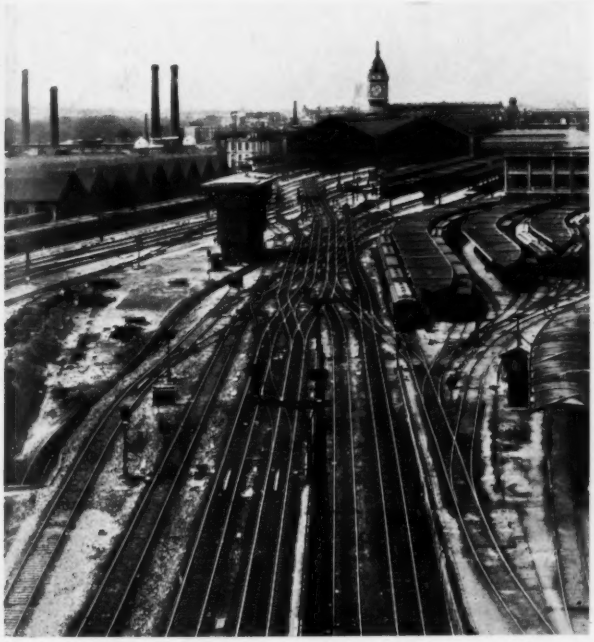


Fig. 8—The down lines leaving the station

indicating circuits, and also changeover and disconnecting equipment. Only a small part of the space is occupied by this apparatus, the remainder being given up to the mechanical part of the route-lever frames and their circuit controllers.

The third, or top floor, contains these frames and forms the signal box proper (Fig. 4). The route handles are arranged in four rows, above which the illuminated diagrams are mounted. These carry not only the indicators for the various track circuits, but also show the position of each pair of points and include all necessary subsidiary indications from the adjacent cabins. At one end of the frame is a control cabinet for certain individual controls, slotting, detonator placers, &c., and at the other a frame containing levers for effecting the lock-and-block working for certain signals, next to which the train describers are grouped. These are of the St. Chamond-Granat type, similar to the telegraphs now often used in the French marine services.

Frame No. I has 572 lamps in its illuminated diagram, 9,300 contacts inside it, and 699 relays working in conjunction with them. The total length of conductors in the cabin for that frame is 269 km. (167 miles) and outside it totals 623 km. (387 miles). The lighting is absolutely independent of the signal supply circuits, and its conductors are not included in these figures. In many cases a route can now be set up in one ninth of the time taken with the old apapratus. Frame No. II is smaller but does not otherwise differ from Frame No. I.

The signals are all of the light type. There are two types of light unit, the Type D and the Novalux, the latter giving a particularly wide angle of dispersion, found necessary for the numerous curved routes the drivers have to take. The lamps are double filament, 15-W. at 8 V. The circuits are always arranged so that the failure of any unit in a signal aspect cannot produce a less restrictive indication than the one intended. The point machines are of the pattern already widely used on the P.L.M., with the latest improvements in details of design as experience has dictated. Cab signalling ramps are provided in connection with warning signals and detonator machines at certain stop signals.

Protection Against Fire

Very complete precautions have been taken against the risk of fire, the cabin building having a system of pipes for discharging carbonic anhydride, fed from four bottles containing 32 kg. of gas at a pressure of 80 kg. per sq. cm. These bottles are brought into action instantly by pulling handles on the staircase, near the door of each section, normally sealed under glass masks. Electric temperature detectors controlling an alarm whistle in the Traffic Supervisor's Office, and indicators enabling the source of fire to be localised, are provided. The cables are all protected by a special fire and acid resisting composition, while Pyrene fire extinguishers and fire masks are liberally installed, especially in the signal boxes proper.

Power Supply

Power is obtainable from two outside public supplies, the *Union d' Electricité* (U.D.E.) and the *Compagnie Parisienne de Distribution d'Electricité* (C.P.D.E.), connection being made normally to the former. If this fails the installation is instantly switched over automatically to the latter and back again when the U.D.E. supply is restored. The d.c. supply at 120 V. for the point operation is obtained through a transformer and motor-generator. The d.c. consumption is normally from 30 to 40 A., but can rise exceptionally to 1,200 A. if several long routes are set by chance simultaneously. There are three converter groups, but only one is in use at a time, with automatic changeover in the case of failure. To meet the case of total failure of the a.c. supplies, petrol generator sets, with automatic starting equipment, have been provided for the d.c. feeds (3 sets, 2 running at a time in parallel) and the a.c. feeds (2 sets). The starting batteries are of the cadmium-nickel type, charged from Tungar rectifiers. These sets and their accessory equipment are housed in the basement of the parcels department, and also fitted with carbonic anhydride fire extinguishing apparatus.

The installation has enabled the working of the station to be accelerated, and on certain holiday days as many as four sections of one express have been sent off in 12 minutes, and 42 extra trains handled to time during the day, fast trains being despatched on the down fast line at the rate of 12 in one hour at the busiest periods.

CROYDON—VENICE AIR SERVICE.—The Italian company, Avio Linee Italiane—for which Imperial Airways Limited is general agent—is now operating a London–Venice air service accomplishing the journey from Croydon to Venice in 6 hr. 50 min.

Jubilee of the Brünig Railway

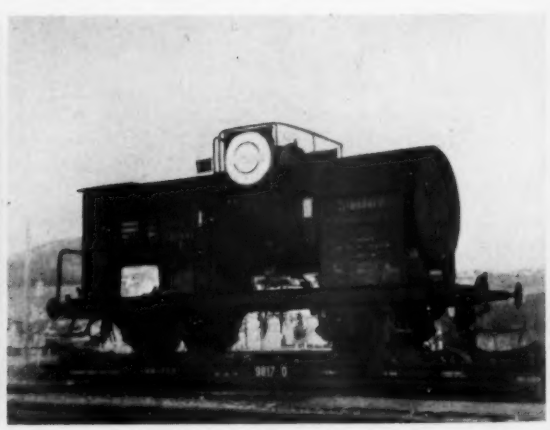
(See article on page 1181)

Composite second and third class bogie coach

2-6-0 locomotive in use on the Interlaken section

Excursion train leaving Meringen for Lucerne, with rack banking engine

Approach to Lucerne station, Brünig line, showing standard gauge sidings on left



Left: Double-headed Interlaken train leaving Lucerne. Right: Metre gauge transporter truck carrying a standard gauge tank wagon

RAILWAY NEWS SECTION

PERSONAL

L.N.E.R. APPOINTMENTS

The L.N.E.R. announces that in consequence of the impending retirement of Mr. R. A. Thom, Mechanical Engineer, Southern Area, at the end of July next (see our issue of May 27), the directors have made the following appointments:—

Mr. E. Thompson, Mechanical Engineer, North Eastern Area, to be Mechanical Engineer, Southern Area (Western Section).

Mr. A. H. Peppercorn, Locomotive Running Superintendent, Southern Area, to be Mechanical Engineer, North Eastern Area.

Mr. F. W. Carr, Assistant Mechanical Engineer, Stratford, to be Mechanical Engineer, Southern Area (Eastern Section).

The following appointments are also announced by the L.N.E.R.:—

Mr. L. Hyde, Works Manager, Inverurie, to be Works Manager, Cowlairs.

Mr. L. Farr, Works Manager, Cowlairs, to be Works Manager, Inverurie.

Mr. J. B. Dawson, District Engineer's Office, Sheffield, to be District Engineer, Sheffield, in succession to Mr. L. V. Warhurst (retired).

Mr. W. G. Dunstan, Engineer's Office, York, to be Assistant District Engineer, Ipswich.

Mr. E. Thompson, who, as announced on this page, has been appointed Mechanical Engineer, Southern Area (Western Section), L.N.E.R., was educated at Marlborough and Pembroke College, Cambridge. He took the Mechanical Sciences Tripos in 1902, and subsequently served with Beyer, Peacock & Co. Ltd., and the Midland Railway Company. He left the Midland Railway in 1905 to join the staff of the Royal Arsenal, Woolwich, and in the following year was appointed to a position in the Running Department of the North Eastern Railway. In March, 1909, he became Assistant Divisional Locomotive Superintendent at Gateshead-on-Tyne, and during his service with the N.E.R. visited America. Mr. Thompson left the North Eastern on his appointment as Carriage and Wagon Superintendent of the Great Northern Railway at the beginning of 1912, and in March, 1916, went to the Royal Arsenal at Woolwich, on war service. In December, 1916, he proceeded to France, where he was attached to the Headquarters Staff of the Director-General of Transportation. By March, 1918, he had reached the rank of Lt.-Colonel, R.E., had been twice mentioned in despatches, and awarded the O.B.E., Military Division. Mr. Thompson was demobilised in March, 1919, and resumed his work with the Great Northern Railway. In 1923 he was appointed Carriage and Wagon Workshops Manager, North Eastern Area, L.N.E.R., coming to London as Assistant Mechanical Engineer, Stratford, in 1927. He was promoted to be Mechanical Engineer, Stratford, in 1930, and went to the North Eastern Area in a similar capacity in 1933, the position he now vacates.

Mr. E. Thompson

Appointed Mechanical Engineer, Southern Area (Western Section), L.N.E.R.

Mr. F. W. Carr

Appointed Mechanical Engineer, Southern Area (Eastern Section), L.N.E.R.

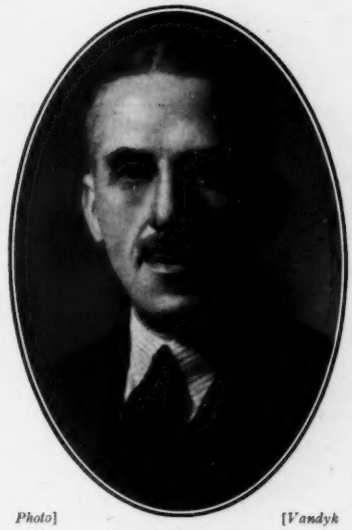


Photo [*Vandyk*

Mr. Alfred Bond

Appointed Chief Clerk to the Chief Goods Manager, Great Western Railway

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Mr. F. W. Carr, who, as announced on this page, has been appointed Mechanical Enginer, Southern Area (Eastern Section), L.N.E.R., is a native of York, where he was educated. He served an apprenticeship with the North Eastern Railway, obtaining a varied experience, until in 1910 he was appointed Motor Vehicle Superintendent to that company. During 1915-16 he held an appointment under the Ministry of Munitions, and served at Woolwich Arsenal, while from 1916 to 1919 he was attached to the British Expeditionary Forces in France, where he attained the rank of Lieut.-Colonel, R.E. On demobilisation he was appointed Assistant Works Manager at the locomotive works, Darlington, and in 1921 became Works Manager in charge of the locomotive works at Gateshead. In 1923 Mr. Carr was appointed Carriage and Wagon Works Manager, York, and in 1927 proceeded to Darlington as Works Manager in the locomotive shops. Mr. Carr went to the Gorton locomotive works as Works Manager in 1933 and subsequently acted as Assistant Mechanical Engineer, Stratford, until January 14 of last year, when he was confirmed in that position.

Mr. Alfred Bond, whose appointment as Chief Clerk to the Chief Goods Manager, Great Western Railway, in succession to Mr. J. A. Williams, was recorded in our issue of June 3, entered the service of the G.W.R. in the Horse Department in 1899, and three years later was transferred to the Chief Goods Manager's Office where he has spent the rest of his railway career, gaining experience

Right: Mr. H. W. Morgan (seated), Docks Manager, Swansea, G.W.R., with some of the members of the Railway Students' Association whom he conducted round the company's Swansea dock system on board the steam-tug "Trusty." The R.S.A. Annual Convention recently held in South Wales was reported on page 1127 of our issue of June 10

Left: Members of the Institution of Locomotive Engineers, and German guests, on a visit to the Forth Bridge in connection with the summer meeting at Glasgow (see report on page 1178). In the group are Mr. W. A. Stanier (Chief Mechanical Engineer, L.M.S.R.), Mr. George Mills (Divisional General Manager, Scotland, L.N.E.R.), and Mr. W. A. Fraser (Engineer, Scotland, L.N.E.R.)

Right: Mr. W. A. Stanier, Mr. J. Ballantyne, and group of German delegates to the Institution of Locomotive Engineers Congress on arrival at Glasgow

Photo] *[Scottish Daily Express*

of the work on the various sections. In 1916 Mr. Bond went with the B.E.F. to France and was engaged in military service for three years. He returned to the G.W.R. in 1919, and for a time specialised in investigations into the possibilities of use of mechanical appliances at goods stations. Mr. Bond was responsible for the forming of the No. 4 Railway Operating Company of Royal Engineers, Supplementary Reserve, which he commanded until it was disbanded. For the last 10 years Mr. Bond has been in charge of the New Works Section of the Chief Goods Manager's Office.

Mr. W. Enves, Stationmaster at Victoria, Southern Railway, has retired, and has been succeeded by Mr. J. Bridger, formerly Stationmaster at Guildford.

Mr. G. H. Pearson has retired from the position of Assistant Mechanical Engineer and Works Manager, Ashford, Southern Railway, to which he was appointed in 1923. He is succeeded as Works Manager at Ashford by Mr. C. J. Hicks. Mr. Pearson obtained his early experience on the Great Western Railway, but had been at Ashford since 1914.

Lord Stonehaven (who received a viscounty in the Birthday Honours announced last week) has been appointed Chairman of Tanganyika Concessions Limited. General Sir Reginald Wingate, the former Chairman, remains on the board as Vice-Chairman.

Mr. G. C. Hutchinson has been appointed Managing Director in place of the late Sir Robert Williams

Tanganyika Concessions has a large shareholding in the Benguella Railway Company.

The Lord President of the Council has appointed Professor R. H. Fowler, O.B.E., M.A., F.R.S., at present Plummer Professor of Applied Mathematics in the University of Cambridge, to be Director of the National Physical Laboratory with effect as from October 1, 1938. Professor Fowler will succeed Dr. W. H. Bragg, who has been elected to the Cavendish Professorship of Experimental Physics in the University of Cambridge.

INSTITUTE OF TRANSPORT

The following elections of corporate members were made during May:—

Members

Mr. D. G. Bourn, Traffic Manager, Iraq State Railways.

Mr. E. R. L. Fitzpayne, Deputy General Manager, Glasgow Corporation Transport.

Mr. R. F. Smith, General Manager, Glasgow Corporation Transport.

Associate Members

Mr. E. H. Edlin, Higher Executive Officer, Board of Trade.

Mr. O. G. Macnair, Superintendent of Transportation, Jamaica Public Service Co. Ltd.

Mr. John Heaton, A.C.I.S., and Mr. Alan Kiernan, A.M.I.Mech.E., have been elected directors of Edward G. Herbert Limited. Mr. Heaton has been Secretary of the company (which he has served for 21 years) since 1930; and Mr. Kiernan, who is Works Manager, joined the company in 1931.

Señor Andres Antonio E. Tramonti, a former railway workman, has been appointed President of the Argentine Railway Pensions Fund, at a salary of $2,000 per month, in succession to Dr. Agustín de Vedia, who has resigned. The appointment of a former labourer to such a high position is without precedent, but the new President, who is a former Chairman of the Union Ferroviaria, has had previous experience on the board as the railwaymen's representative.

We regret to record the recent death, at the age of 83, of Herr Georg Rank, who, for many years in the service of the former Royal & Imperial Austrian State Railways, was from 1906 to 1915 Chief of the Signalling and Safe working Section of the Railway Ministry in Vienna. He was responsible for much that was characteristic of Austrian signal practice and devised the Rank station block apparatus, extensively used in Central Europe.

We regret to record the sudden death on June 4 of Lt.-Colonel A. F. Hosken, who retired in 1923 from the position of Locomotive and Carriage Superintendent of H.E.H. the Nizam's State Railway.

M. Richemond, President of the board of the Paris—Orleans Railway Company, has resigned and has been appointed Honorary President in recognition of the eminent services he has rendered to the company for more than ten years under particularly difficult circumstances. M. Charles Laurent, Ambassador in the French Diplomatic Service, succeeds M. Richemond as President.

Sir John Reith, Director General of the British Broadcasting Corporation, has accepted the invitation of the Government to become the first full-time Chairman of Imperial Airways Limited. The appointment of a full-time Chairman is in accordance with the recommendations of the Cadman Committee on Civil Aviation, outlined in our issue of March 11.

INDIAN RAILWAY STAFF CHANGES

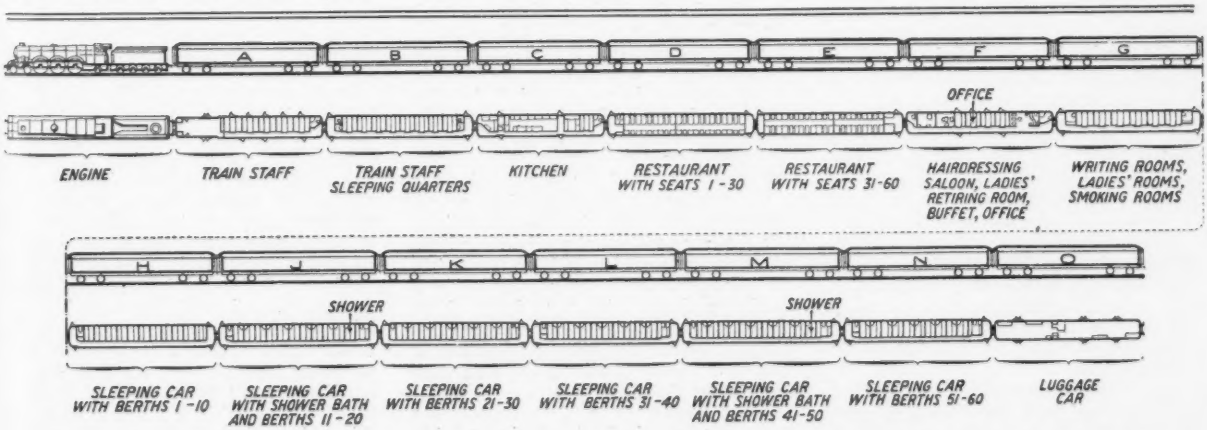
Mr. G. W. Browne has been appointed to officiate as Deputy Chief Mechanical Engineer (Transportation, Power), E.I.R., as from March 31.

Mr. N. K. Mitra has been appointed to officiate as Deputy Chief Engineer, E.I.R., as from April 1.

Mr. W. L. D. Martyn, Deputy Agent, Organisation, N.W.R., has been granted seven months' leave as from April 4.

Mr. R. Proudlock has been appointed to officiate as Divisional Superintendent, Ferozepore, N.W.R.

Mr. R. W. Taylor has been appointed to officiate as Chief Engineer, E.B.R., as from April 14.



Composition of the L.N.E.R. Northern Belle cruising train, which is again making three trips from London to Scotland this year (see editorial notes on page 1150)

XUM

Institution of Locomotive Engineers

Summer Meeting in Glasgow

Particulars of the run made by the special train to Glasgow provided by the L.M.S.R. for the London members of the Institution of Locomotive Engineers, and their German visitors, appeared in our issue last week. We also published illustrations and descriptions of the new streamlined locomotive *Duchess of Gloucester*, which hauled the train, and interior views of the dynamometer car attached on this occasion. The details of the run shown in our table, which, of course, was not a complete log, were supplied by the courtesy of Mr. W. A. Stanier, Chief Mechanical Engineer, L.M.S.R. The German party attending the meeting comprised seventeen Reichsbahn officers headed by Dr. Dorpmüller; the others were Herren Bergmann, Dauner, Dorpmüller, Emmelius, Gaedicke, Drs. Gährs and Gugel, Herr Gunther, Dr. Hardt, Herr Hormann, Dr. Kuhne, Herr Lehner, Prof. Dr. Nordman, Herren Ruthemeyer and Seydel, and Dr. R. P. Wagner.

On Thursday morning, June 9, the London members, who had been joined overnight by other members of the institution from various points, assembled at Glasgow Central station and travelled in reserved coaches to Wemyss Bay, where, as guests of the L.M.S.R., they embarked on the turbine steamer *Duchess of Montrose* for a trip to Inverary calling at Rothesay *en route*. The sail through the Kyles of Bute amidst the wonderful scenery and in bright sunny weather was greatly enjoyed by the party and drew exclamations of admiration from the German visitors, few of whom had visited the district previously, whilst some indeed were making their first acquaintance with Great Britain.

Luncheon was served on the outward journey and tea on the return. At Inverary an hour was spent ashore, and the return journey to Wemyss Bay was begun at 2.15 p.m. The institution dinner took place the same evening at the Grosvenor Restaurant, Glasgow. Mr. W. A. Stanier, President of the institution, occupied the chair; on his right sat Dr. Dorpmüller, German Minister of Transport and General Manager of the Reichsbahn, and on his left Dr. Burgin, British Minister of Transport. Others at the table included the Lord Provost of Glasgow, Sir John Stewart; Mr. Cecil M. Weir, Chairman of the Empire Exhibition Administrative Committee; Sir Nigel Gresley; and Mr. J. Craig, Chairman and Managing Director of Colvilles Limited.

The Chairman, after the loyal toast, submitted that of "The Head of the German State." The toast of "Our Guests" was responded to by Dr. Burgin, who read an address of welcome to the German visitors in their own language.

Dr. Dorpmüller expressed his thanks in English, and paid tribute to the British railways, expressing his great appreciation of the kindness shown to him and his colleagues on this occasion. He referred to the visits paid by large groups of representatives of the transport industry in Great Britain to Germany, as well as Dr. Burgin himself, and said that he hoped they had enjoyed and indeed profited by what they had seen there. On the other hand, Germany had sent many officers to study British railways and British transport methods, and, Dr. Dorpmüller added, they held a high regard in Germany for British rail history and progress.

Other speakers were:—

Major H. P. M. Beames; the Lord Provost; Messrs. W. A. Agnew; Cecil M. Weir; J. Clayton (Southern Railway); J. Ballantyne, Chief Officer for Scotland, L.M.S.R.; Sir Nigel Gresley; and Mr J. Craig.

On Friday morning, June 10, the members and their guests were conveyed in motor coaches to the Clydebridge Steel Works of Colvilles Limited, at Cambuslang, four miles south-east of Glasgow. These works now cover an area of 140 acres and consist essentially of two melting shops comprising eight melting furnaces; a cogging mill; and a three-high plate mill, together with the necessary equipment of electric power stations, gas producers, plate-shearing machines and other auxiliary plant. The works employ over 1,200 men and during the past four years have been working to full capacity.

On arrival, the party was divided into a number of small groups, each group being conducted through the different sections of the works by a guide who explained the various processes and methods observed. Favourable comment was heard on all sides respecting the modern character of the plant, the orderly and clean appearance of the buildings, and the general air of efficiency everywhere observable. Colvilles Limited is among the oldest and largest steel manufacturing concerns in the United Kingdom, and the Clydesbridge works is only one of a group of establishments controlled by the firm.

The party then proceeded in the motorcoaches to the Central Station Hotel, Glasgow, where the members and guests were entertained to luncheon by Colvilles Limited; the chair was taken by Mr. J. Craig, Chairman and Managing Director. At the conclusion, Mr. Craig expressed the pleasure of his co-directors and himself at the visit of the institution members to the works and the honour done them thereby. He extended a welcome to the members to attend the firm's cinema in the Exhibition grounds that evening at 6.30.

Mr. Stanier, in a few well-chosen sentences, thanked Mr. Craig and his colleagues for their kindness in arranging such an interesting visit and for the luncheon which followed it.

The afternoon session on June 10 was devoted to a visit to the St. Rollox locomotive and carriage works of the London Midland & Scottish Railway. Here again the party was on arrival formed into conducted groups, passing in turn through the carriage section and afterwards the various shops comprising the locomotive works. The visitors found much of interest in every department, special attention being given to the operation of some of the recently installed machine tools of various kinds. Considerable interest was also shown in the two historic locomotives, namely the single-driver express engine No. 123 of the erstwhile Caledonian Railway (4-2-2 type), and the 4-6-0 Jones goods engine of the former Highland Railway, which is fitted with the Jones louvred chimney. These two locomotives are preserved in the St. Rollox Works as interesting relics of past times and each has mounted upon it, in a convenient and readable position, a brief description and an outlined dimensional drawing giving the principal particulars of the type.

The visit began in the saw mill section of the carriage works and concluded in the iron foundry of the locomotive works. Afterwards the motorcoaches conveyed the members to the Empire Exhibition in Bellahouston Park, where after partaking of tea they visited Colvilles Cinema and there saw a very interesting film covering the different aspects of steel production and the methods followed in the manufacture of plates and numerous other objects. A highly interesting and informative discourse accompanied the showing of the picture, both having the merit of clearness and thus adding to the ease with which everything could be followed orally as well as visually.

Saturday, June 11, was left free for a more extensive tour of the Empire Exhibition, the party foregathering at the Concert Hall Restaurant for lunch. This was a quite informal and largely attended gathering, those present including all the German visitors with the exception of Dr. Dorpmüller, who returned to London by the Coronation Scot leaving at 1.30 p.m.

On Sunday, June 12, the members assembled at Queen Street station, Glasgow, L.N.E.R., and left for North Queensferry at 10 a.m. in a special train provided by the railway company. On arrival there, they made an inspection on foot of the Forth bridge, during which Mr. W. A. Fraser, Engineer (Scotland), L.N.E.R., and Engineer of the Forth Bridge Railway Company, explained the technical details of the construction and maintenance of the bridge. They afterwards left by motorcoach for Edinburgh, lunching as guests of the L.N.E.R. at the North British Station Hotel. At this Mr. George Mills, Divisional General Manager, Scottish Area, L.N.E.R., made a speech in which he referred to the pleasure that had been

conferred by the visit of the German railway officers to Scotland. Mr. Stanier briefly replied. At 2.15 p.m. they left, again by motorcoach, for a visit to the palace of Holyroodhouse, after which a tour was made of Edinburgh Castle, including the Scottish National War Memorial. Subsequently, tea was taken at the North British Station Hotel, and at 6.0 p.m. the journey from Edinburgh to Glasgow by special train was begun. On arrival at Glasgow, the meeting ended and the members, who by common consent voted it a most interesting and enjoyable one, were free to return to their respective home destinations. The utmost cordiality existed between the members and the German visitors throughout the trip, the latter being lavish in their expressions of appreciation of all they had seen and of the hospitality accorded them.

As on former occasions, the Visits Committee, both before and during the meeting, worked hard to make it a success. The members, Messrs. L. J. Le Clair, J. F. B. Vidal, and G. A. Musgrave, were ably seconded in their efforts by the Scottish Local Committee, consisting of Messrs. J. Robertson, H. Fowler, and J. S. Scott. Both as separate units and in combination with one another they earned the gratitude of the members for all they did, and the vote of thanks accorded them was well merited in every respect.

A word of praise is also due to Major H. A. Harrison, Secretary of the institution, who expended a large amount of energy and thought over a long period in co-operating with the committee members, and in conjunction with them doing everything possible to ensure that the members should be afforded the maximum of interest and enjoyment.

STAFF AND LABOUR MATTERS

Decision of Chairman of the Railway Staff National Tribunal

The scheme of Machinery of Negotiation for Railway Staff makes provision for certain issues to be referred to the Chairman of the Railway Staff National Tribunal for decision, and the first decision under this procedure was issued on May 27.

The claim, which required decision on the basis of an agreed statement signed on behalf of the Associated Society of Locomotive Engineers and Firemen and of the railway companies was " that a national scale of lodging allowances be set up for engine cleaners transferred from one depot to another for seasonal work and owing to redundancy."

The decision is prefaced by following remarks of the Chairman :—

(1) The practice of the different companies differs in respect of lodging allowances and in some cases the differences are related to variations in practice or organisation in matters with which it would be incompetent for me to deal in deciding upon the limited issue submitted to me.

The need for dealing with hardships varies with the circumstances of a given period, or local conditions, or in some cases with individual circumstances.

Any decision which I now give, however, will be universally applicable to cleaners in all the companies and will remain in force until changed by the procedure of the machinery of negotiation. It cannot, therefore, provide for such temporary or local circumstances, which are to some extent covered by the special and varying arrangements referred to of the different companies. It follows that the formal decision which will now be given must not be taken as necessarily replacing any special arrangements by the different companies. It will prescribe an arrangement of general application which may of course be increased in particular circumstances by the companies on their own motion or in agreement with the unions.

(2) I think that there is a real distinction between transfer owing to redundancy in the strict sense, and transfer for the convenience of the company (seasonal requirements, &c.).

Where, through a general decline of traffic, &c., it becomes necessary to reduce total staff, the " reversed promotion " arrangements operated by the railways are the alternative (obviously preferable for the staff as a whole) to the dismissals which are customary in most industries from all ranks where there is a superfluous personnel. In effect the result is to share, to a greater extent than in most industries, the misfortune of declining trade, and to limit, to a much greater extent than elsewhere, actual dismissals, to junior men who are less likely to have family responsibilities.

Transfer is an incident of this process and should, in my view, be regarded as the lesser of the two evils. To make the system more expensive by the addition of lodging allowances in such cases might endanger its operation. Happily " redundancy " transfers of this kind are now few in number, but a decision now given may be in operation at a time when it will again be necessary to effect economies and when it will be in the interest of the staff that the system applied during the last depression should be so operated as to entail the smallest number of dismissals

I am not, therefore, recommending lodging allowances in case of transfer owing to redundancy But " redundancy " must of course be understood in the strict sense where the system referred to is in operation in accordance with the customary principles, and transfers which are due to a merely local superfluity must be regarded as being for the company's convenience.

(3) I note that lodging allowances are made, at the rate of 3s. a day and night (see paragraph 53 of the agreed statement) in cases of " working away from home station," but that there is no general arrangement for lodging allowances in the case of transfer to a new station.

It is obvious that if formal transfer is made in cases in which the work in the new district is likely to be of short duration real hardship is involved and the distinction between working away from home station and transfer becomes an unreal one. I consider that the only satisfactory principle is that " transfer " for the company's convenience should only be regarded as operative for the purpose of depriving a man of his allowance after he has in fact been in the new area for a prescribed period, which should, I think, be three months.

(4) Transfer from one depot to another which does not involve a change of the place of living should not give rise to a right to lodging allowance. This might occur where the depots are close to each other and the place of living perhaps between the two; and also where the man prefers to travel, and is permitted to do so, as an alternative to changing his home. In the latter case there may be allowances in respect of time taken in travelling and with a free pass. My decision cannot of course prescribe the arrangements suitable in such cases, but it is obvious that when they are made they are an alternative to lodging allowance.

There may be other cases in which, under special awards or agreements, arrangements have been, or may be, made which are not less favourable than the lodging allowance which will now be prescribed ; in these too the lodging allowance will not be applicable.

(5) I do not consider that the lodging allowance which will be prescribed should be generally applicable, as an obligatory arrangement, to unmarried men without dependants. Nor should the lodging allowance be regarded as applicable to transfers made at the request of the man transferred, nor in case of promotions (which are indeed not included in the application). In general, however, I wish to emphasise again that I can only define the extent of an obligatory and generally applicable decision which should not be taken as rendering unnecessary or discouraging supplementary arrangements for special cases.

The Chairman decides in principle that " in cases where cleaners, not being unmarried men without dependants, are required to change their place of living for the company's convenience (and not owing to redundancy) an allowance of 3s. a day and night (with a reduction of 1s. where the company provides lodging accommodation) shall be given for a period of three months," and he suggests that the parties should arrange in agreement the precise wording of a new rule to give effect to this principle.

Parliamentary Notes

Road Haulage Wages (No. 2) Bill

This Bill was read the second time in the House of Lords on June 14 and committed to a Committee of the whole House on June 28.

Railway Bills Advanced

The London & North Eastern Railway Bill and the Southern Railway Bill were given a second reading in the House of Lords on June 15.

The Summer Timetables

This summer's British timetable alterations are the fewest on record for some years past

The summer timetables this year come into force on July 3. Apart from seasonal amplifications of service, most of the changes are slight.

London Midland & Scottish Railway

A new 2-hour breakfast car express will leave Euston at 8.10 a.m. for Birmingham and Wolverhampton, calling at Watford and Coventry, and running the 76·5 miles between the two last-mentioned stops in 73 min. (62·9 m.p.h.). To relieve the Irish Mail, a Liverpool portion will run on the 8.30 a.m. from Euston to Manchester, preceding the Manchester portion from Rugby, and reaching Liverpool at 12.21 p.m. The up Welshman will omit the Bletchley call of previous years, and run non-stop over the 179·3 miles from Chester; but the up Midday Scot will call additionally at Preston, and the up Perth express due in Euston at 7 p.m. will call at Bletchley, both arriving 5 min. later (at 9.35 and 7.5 p.m. respectively). A new train is to leave Glasgow at 10.40 a.m. and Edinburgh at 10.43 a.m. for Preston, Manchester, Southport, and Blackpool, reaching Manchester at 3.55 p.m., and in consequence the 10.5 a.m. from Glasgow to Birmingham will cease to call at Preston, though not accelerated. The 1.28 p.m. semi-fast from Carlisle will start at 1.5 p.m., and by acceleration will be brought into Crewe in time to catch the 4.10 p.m. from Liverpool to Euston instead of the 5.25 p.m., so that through passengers will be in London by 7.40 instead of 8.40 p.m. In Scotland the Saint Mungo and Bon Accord 3-hr. trains between Glasgow and Aberdeen, twice daily in each direction, are reinstated for the summer season. Further improvements are to be made in the Ayrshire Coast service, so that in addition to the two 45-min. trains between Glasgow and Ayr (41·4 miles), the 9 a.m. and 12.30 p.m. down and 1.52 p.m. up all take 50 min., including the Paisley stop, and there are various other trains in 53-55 min.

London & North Eastern Railway

Both speed and distance records will still remain in L.N.E.R. hands, the down Coronation being booked from King's Cross to York in 157 min. at 71·9 m.p.h., the fastest run in the British Empire, while the Flying Scotsman resumes its non-stop running in each direction between King's Cross and Edinburgh (392·7 miles)—the longest non-stop run in the world. The latter will incorporate entirely new rolling stock, and reinstatement of the 5.15 p.m. 3-hr. train from Edinburgh to Aberdeen will make it possible once again to reach Aberdeen in 10¼ hr. from King's Cross, though the 12.45 p.m. up service from Aberdeen, connecting with the Coronation and reaching London in 9¾ hr., is still the quickest. The 8.15 a.m. from Newcastle to King's Cross is to be divided, the Bournemouth portion following at 8.20 a.m., and the former will be accelerated from York, covering the 105.5 miles from Grantham to King's Cross in 108 min., and reaching London at 1.15 p.m. The 9.10 a.m. from Hull will start at 9.30 a.m., follow instead of precede the former from Doncaster, and reach King's Cross at 1.30 p.m., running the 76·4 miles from Peterborough in 79 min. Owing to the increased B. & N. service between Newcastle and Bergen, the connecting 1.20 p.m. Scotch express from King's Cross is to be divided daily, the relieving 1.10 p.m. running non-stop to York. Similarly the Lincolnshire portion of the 4 p.m. Leeds and Newcastle express from King's Cross will run daily as a separate train at 4.5 p.m. In the North Eastern Area, the centenary of the Newcastle and Carlisle line is to be celebrated by a drastic revision and acceleration of the service, including a new non-stop buffet car express from Newcastle to Carlisle at 12 noon, covering the 60½ miles of difficult grades and numerous service slacks in the hitherto unprecedented time of 77 min. Other new trains are a 10.10 a.m. from Newcastle, calling only at Hexham, and 4.20 p.m. semi-fast, with an acceleration by 15 min. of the 5.20 p.m. to a 90-min. journey; and, in the reverse direction, 2.50 p.m. from Carlisle to Newcastle, calling only at Haltwhistle (80 min. and a 12-min. acceleration of the previous 2.28 p.m.), and new trains at 5.32 and 8.27 p.m., the latter in 80 min. Most of the trains over this route carry buffet cars.

Southern Railway

Completion of the electrification of the Mid-Sussex line from Dorking North to Ford Junction, the coast line from West Worthing to Havant, the Littlehampton and Bognor Regis branches, and the link from Three Bridges to Horsham, introduces some far-reaching changes in the Central Section timetables of the S.R. The service to and from Littlehampton is provided chiefly by a prolongation of the London—West Worthing trains *via* Hayward's Heath; and Bognor, Chichester, and Portsmouth are linked with London by a service at hourly intervals over the Mid-Sussex line. Average times between Victoria, London Bridge, and Bognor are reduced by about 20 min.; during the day 102 min. from Victoria to Bognor, by trains leaving 18 min. after the hour, is the usual overall time, but the best evening service takes 87 min. as compared with 99 min. previously. Elsewhere Worthing is brought within 72 min. of London Bridge (previous best 79 min.), and Hayward's Heath in 42 min., Lewes in 57 min., and Eastbourne in 79 min. are all slightly faster times than ever previously tabled. Smart running is also involved in such times as 61 min. from London Bridge to Brighton with intermediate stops at both Hayward's Heath and Preston Park, the latter to divide the train. There are no other Southern changes of special note.

Swiss Speed Enterprise

Several changes of importance are made in the Swiss 1938-39 timetables, which came into operation on May 15. Delivery of additional five car lightweight coaches has permitted the establishment of further fast buffet-car services. Two 5-car sets (hauled by an electric locomotive) make an interesting daily circuit, one leaving Zurich at 7.7 a.m. for Geneva *via* Berne and Lausanne, then Geneva—Lausanne — Bienne — Basle, Basle—Zurich, and Zurich—Berne—Geneva a second time; while the other does the same circuit in the reverse direction. Each train thus travels 559 miles daily, in an actual running time of about 10¾ hr.—a remarkable achievement in a country with the physical configuration of Switzerland—and, further, connects up all the five largest Swiss cities. In each six-day week these two sets together cover 6,708 miles at an average running speed of 52 m.p.h. One of the two new three-car streamlined units provides a new express service from Rorschach to Berne and back daily, *via* St. Gall and Zurich; this leaves Rorschach at 7.57 a.m., and Zurich at 9.20 a.m. with a 94 min. run over the 80¾-mile run to Berne, and returns at 7.13 p.m., reaching Zurich at 8.49 p.m., and Rorschach at 10.22 p.m. Between these two journeys a run is made from Berne to Bienne and back, and another from Berne to Basle and back *via* Olten (3.13 p.m. from Berne, Basle 4.30/5.25 p.m., Berne 6.48 p.m.), making a total daily mileage of 457. There are thus three high-speed services in each direction daily between Berne and Zurich. In the Winterthur area reconditioned and new diesel railcars are being put into service on complex daily circuits extending as far as Basle in the west and Schaffhausen and Singen in the north. The Berne-Lötschberg-Simplon Company also introduced in April some handsome new two-car *Fléches Bleues*, intended for working the Berne—Neuchâtel, Berne—Schwarzenburg, and Interlaken Zweisimmen lines.

Forthcoming Events

June 17–21.—Stephenson Locomotive Society. Summer Tour to Ireland and Western Scotland.

June 20–22.—Industrial Transport Association at Hull. Annual Congress.

June 25–30.—Permanent Way Institution, at Cologne. Summer Convention.

Jubilee of the Brünig Railway

This important line connecting Lucerne with the Bernese Oberland is one of the very few Swiss metre gauge railways incorporating a rack section that is still worked by steam

(*See illustrations on page* 1174)

The first section of the metre-gauge line connecting two of the most important tourist centres in Switzerland—Lucerne and Interlaken—was opened on June 14, 1888, namely from Alpnachstad to Brienz; the connection at each end was then made by the steamer services on the lakes of Lucerne and Brienz. The Alpnachstad-Lucerne extension was opened in June of the following year, but through rail connection to Interlaken was not available until August, 1916, when the final portion from Brienz to the Ost station at Interlaken was inaugurated.

Originally a part of the Jura-Berne-Lucerne system, which was absorbed in 1890 into the Jura-Simplon Railway, the Brünig line has been owned and worked by the Swiss Federal Railways since January 1, 1903, and is their only metre-gauge line. It is 73·8 km. in length, and has four rack sections on the Riggenbach system to a total length of 9 km.; the maximum gradient is 12 per cent. (1 in 8½) on the rack and 2·1 per cent. (1 in 48) on adhesion sections. The line is single throughout, with crossing loops at all stations. A considerable tourist traffic is carried, and in 1933 through coaches were introduced between Lucerne, Lauterbrunnen, and Grindelwald in connection with the Bernese Oberland Railways; the service was, however, soon withdrawn, as the facility was evidently not in great demand. There is convenient platform interchange at Interlaken-Ost with the metre gauge Bernese Oberland Railways, and Lötschberg lines for Spiez, Berne, Brigue, and Italy, and for Zweisimmen, where connection is made with the Montreux-Oberland Railway, forming a through tourist route from Lucerne *via* Interlaken to Montreux. The Brünig district is also a favourite winter-sports centre, and special trains are run from Lucerne at week-ends during the season. The largest station is Meiringen, where trains reverse; the workshops for narrow-gauge rolling stock are located there.

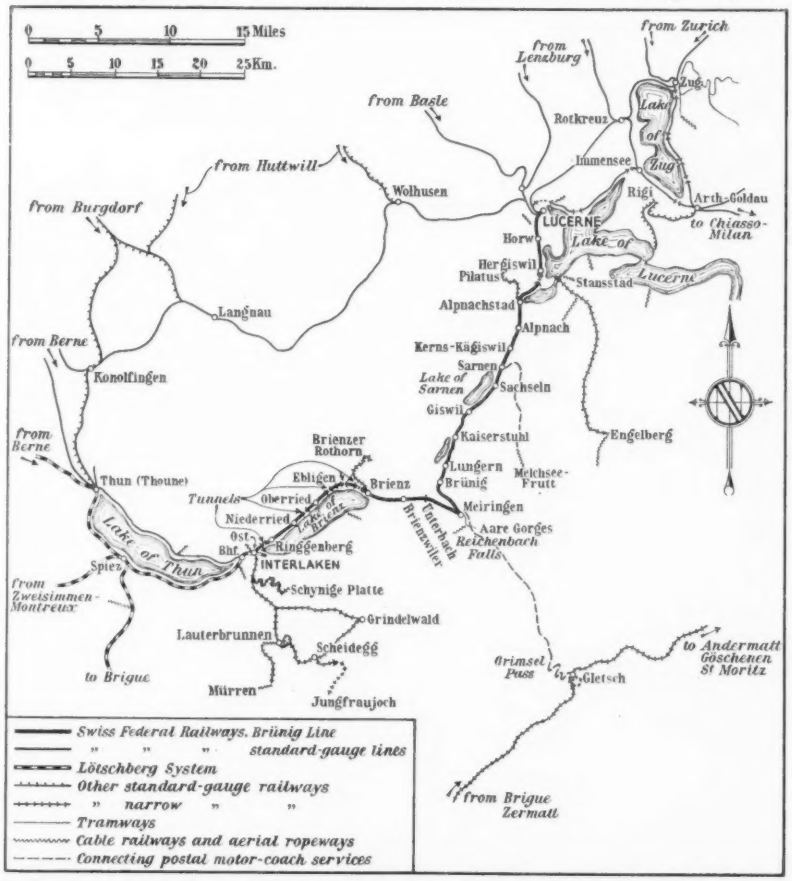
When the line was opened, locomotives of 0-6-0 type, weighing 24·5 *tonnes*, were used on the adhesion, and 0-4-0 locomotives on the Giswil—Meiringen section, where the rack stretches occur. In 1908, 0-6-0 rack engines capable of a higher speed on adhesion sections were introduced, and worked on the Brienz—Meiringen line as well as over the Brünig pass. Meanwhile, 2-6-0 locomotives with a tare of 32 *tonnes* had been placed in service on the Lucerne—Giswil section, and in 1914 appeared an improved superheated engine of the same type. There are at present 31 locomotives of various types, and three light petrol tractors.

The older type of six-wheeled coach has gradually given place to smoothly-riding bogie stock, and the remaining vehicles of the earlier pattern are used only on short-distance local trains and at peak periods. Altogether, the Brünig line has some 130 coaches, 190 goods wagons and vans, and 38 transporter trucks for conveying standard-gauge goods wagons.

Track improvements and renewals have enabled the maximum permissible speed to be gradually increased in recent years on the Lucerne—Giswil and Meiringen—Interlaken lines, and whereas until 1924 the figure of 45 or 50 km.p.h. was usually not exceeded, a maximum of 60 km.p.h. is now allowed on these sections, and even on the rack portion the speed has been raised from 12 to 20 km.p.h.

Electrification of this line has been contemplated for many years past, and given favourable financial and economic conditions would no doubt have been carried out some time ago. It will be undertaken in the near future if assistance is granted by the Government under existing schemes for relieving unemployment. Apart from the usual advantages of electric traction, which would be particularly appreciated on a scenic tourist line of this nature, the overall time could be considerably reduced by eliminating the lengthy stops at Giswil, Brünig, and Meiringen.

On June 14, to commemorate the 50th anniversary of the opening of the Brünig line, special trains from Lucerne and Interlaken brought some 200 guests of the Swiss Federal Railways to the Brünig Pass, where a commemorative luncheon was served at the station restaurant. The guests included officers of the Federal Traffic, Post Office, and other Departments, representatives of the cantons and districts served by the railway, and of the press. There were also present four railway veterans who were in service on the line at the time of its opening; one of them, in fact, took part in the preliminary surveying of the route. In welcoming the guests, Mr. Labhardt, Manager of the 2nd Division of the Federal Railways, referred to the continual improvements which had been made to the track and rolling stock of the Brünig line, despite the difficulties under which the Federal Railways still laboured.



Sketch map showing the route followed by the Brünig Railway and its connections with other lines

THE QUARTER'S RAILWAY LAW

Dependants' Claims in Fatal Accident

Avery v. London & North Eastern Railway Company, 1938. W.N. 196.

It is quite clear that, when a workman is fatally injured in the course of his employment owing to the negligence of a fellow workman, his widow can elect to take proceedings for damage under the Employers' Liability Act, 1880, and the children can elect to take separate proceedings for compensation as dependants of their father under the Workmen's Compensation Act 1925 (sec. 29 of that Act). The difficulty that troubled the Courts in the above and three similar cases, which were heard together, was to decide whether the widow in each case could receive the whole of the damages due under the Employers' Liability Act or only the aliquot share due to her as distinct from the other dependants; and similarly whether the children in their claim under the Workmen's Compensation Act were entitled to the whole compensation, or only their aliquot share, leaving the mother's share in reserve.

In the four cases under discussion four workmen, servants of the railway company, were killed owing to a collision between a ballast train and two light engines negligently driven by servants of the company. The widows of the men took proceedings. These cases show the difficulties which may arise when a workman is killed and his dependants pursue different remedies. The Workmen's Compensation Act enables the injured man or his dependants either to claim under that Act or to take other proceedings. The Act provides for a limited amount of compensation for dependants. Compensation must be awarded as if all the group were before the Court and no member is to get more compensation than he could have got if compensation were being assessed for all. But the members of the group who do apply for compensation must state who the dependants are and these must be joined in the application. If they choose not to appear, the Judge will ignore them and distribute the compensation among the dependants who do appear before him in accordance with the Act. He need not take into account the names of persons who neglect to apply.

In the four cases under discussion the widows took proceedings under the Employers' Liability Act and left the children to claim as dependants under the Workmen's Compensation Act. The widows thus waived their rights under the latter Act, acting no doubt under the advice of the trade union, and the County Court Judge ignored the question of any possible claim by the widows and awarded all the compensation under the Workmen's Compensation Act to be divided among the children.

The Court of Appeal held this to be wrong, but the House of Lords has now overruled the Court of Appeal and affirmed the action of the County Court Judge. The various remedies under these Statutes are apt to be confusing and they are set out clearly in Lord Atkin's judgment in the House of Lords, as follows.

The Various Remedies

The old common law rule that death puts an end to any right of action for damages for negligence should be remembered. This continued until the Fatal Accidents Act, 1846 (Lord Campbell's Act). The action for damages under the Fatal Accidents Act, 1846, is "for the benefit of the wife, parent, or child of the person killed." This includes grandparents and step parents, grandchildren, and stepchildren. Under this Act an action is brought for named members of these classes by the personal representatives of the deceased, and the jury has to give damages proportionate to the injury which has been suffered, the sum being divided among these dependants in such proportion as the jury by their verdict direct. If any dependants are not named in the action they must apply to be added or they will lose their rights. There is no question of reserving a sum in case other dependants apply later.

It was by virtue of this Act that the widow in the present case was able to claim under the Employers' Liability Act, 1880, and the proceedings must be taken to be for the benefit of herself and her children. But under this Act of 1880 there is a limit of three years' earnings to the amount which the dependants of the deceased workman can recover. This Act did away with the defence of "common employment" in proceedings under the Act, which before this Act would have prevented the deceased workman or his widow from recovering in an accident due to the negligence of a fellow workman. Here again the dependants for whose benefit the action is brought have to be named in the plaint and the Judge or jury will assess the damages for each up to the statutory limit.

The Workmen's Compensation Act, 1925, throws its net to include a wider circle of the next of kin, brothers and sisters being included with parents and children. If any of them choose to proceed under either of the other Acts, they are deprived of their rights under this Act. The result of the present decision is that while one dependant (the widow) brings her action under Lord Campbell's Act and recovers three years' earnings, the daughter brings her claim under the Workmen's Compensation Act and recovers the maximum for dependants under that Act. The House of Lords admits that this is a breach of the old rule "one accident, one action" and does not think that the legislature intended this result; but it sees no legal ground for construing the Statutes otherwise, as they stand at present, and its judgments show that if there is to be a reversal of the old rule it is a matter for new legislation.

Judicial Conundrums

The decision of the House of Lords gives rise to some questions to which the answers are at present a mystery. Indeed some noble Lords suggested conundrums which they did not attempt to solve. If one dependant proceeds under the Workmen's Compensation Act and obtains the maximum compensation, and another who has elected to proceed independently of that Act fails in his action and then exercises his right under the Workmen's Compensation Act, how is his claim to be met? If a workman leaves dependant children under fifteen who elect to proceed independently of the Act and a widow who claims under the Act, is the permissible award to include the children's allowance, and is the aggregate maximum to be £600? Perhaps the answer to the first problem is that the arbitrator should not make his final apportionment until the proceedings have ended; and to the second that only dependants who are claimants have to be considered. But, as these learned Judges say, "the matter does not arise here."

"Reasonable Facilities" for Coal Storage

Luton Coal Merchants Assn. v. London Midland & Scottish Railway Company. Traffic Cases (1938) vol. 26 p. 99.

The railway company here had been in the habit of letting the Luton coal merchants space for the storage of coal at the Hitchin Road station. In reorganising the goods station the railway propose to transfer this traffic to a depôt at Limbury Road. It did so because it thought the facilities at Hitchin Road inadequate and that the transfer to Limbury Road was the best method of affording reasonable facilities to traders within the Railway and Canal Traffic Act, 1854. Traders dislike changes and the opposition to the scheme resulted in this application by the Luton Coal Merchants' Association.

Mr. Justice Finlay, who presided at the hearing before the Railway and Canal Commission, in his judgment expressed himself as satisfied that no such inconvenience would result from the transfer as to prevent the facilities from being "reasonable." Neither within the Railway and Canal Traffic Act, 1854, nor within the Act of 1921, sec. 16, which speaks of "convenience" for the receiving and delivering of traffic, did it appear that there were good grounds for granting the traders' application and refusing to allow the change. The learned Judge

did not however decide the point whether a "stacking ground" would or would not be a facility for the delivering of traffic.

Road Traffic Cases

London Midland & Scottish Railway Company and Young's Express Deliveries

London & North Eastern Railway Company and the same. Traffic Cases (1938), vol. 26 p. 209.

There have been several cases before the Traffic Appeal Tribunal dealing with applications for licences as road carriers. The leading case as to alternative facilities is that of *Four Amalgamated Railway Companies and Bouts Tillotson Transport* which decided that the licensing authority upon proof of the need for the vehicles is justified in granting a new licence to applicants unless there are over-riding circumstances to the contrary, *e.g.*, alternative facilities, which are adequate; that is reported in Traffic Cases, vol. 25, p. 158.

In the above cases (Young's Express), four companies of carriers went into liquidation and while in the hands of the liquidator lost part of their traffic. Afterwards these businesses were acquired by Young's Express and some of the lost traffic was regained. It was argued for the railway companies that in applying for a new licence in respect of the expired licences, the applicants could not rely on the traffic which had been regained since the liquidation. But the tribunal rejected their contention. It did so partly in reliance on *Ridgewell's Case* (Traffic Cases vol. 25, p. 9) which was on the same lines. The tribunal held that the applicants were entitled to rely on the increase of traffic which had been regained in this way.

A further and interesting point arose under the Road and Canal Traffic Act, 1933, sec. 5, sub-ss. 1 and 3. Subsection 3 provides that an application must be made to the licensing authority for the area in which the vehicles plying for hire have their "permanent base or centre." The tribunal held that this means the place from and to which the vehicles start and return (in this case Glasgow) and not the place at which the traffic originates.

U.S.A. Railway Revenue and Expenditure in 1937

As illustrating the fluctuations of American railway operating income and return upon capital leading up to and including the year 1937, the following table may prove useful in supplementing the survey of the financial position in the U.S.A. published in the form of an editorial in our issue of March 4.

	Net operating income $	Return on property investment* Per cent.
1932 ...	326,298,008	1·25
1933 ...	474,295,613	1·83
1934 ...	462,652,379	1·79
1935 ...	499,819,118	1·94
1936 ...	667,174,165	2·57
1937 ...	590,180,565	2·27

* Property investment is the value of road and equipment as shown by the books of the railways, including materials, supplies, and cash

The earlier review of the railway position in America published in THE RAILWAY GAZETTE of June 4, 1937, made it clear that the outlook for 1937 was dependent upon a number of factors, chief among them being the rates question, the cost of stores and materials, and State legislation. Unfortunately, as we have already pointed out from time to time, these factors proved unfavourable to the railways, except that the prices of stores and materials, which had continued to rise until about the middle of last year, then showed a slight reduction. Even so, the general level of costs of railway materials in October, 1937, was 15 per cent. higher than twelve months previously, and there were also substantial advances in the prices of coal and fuel oil. A further burden placed on the railroads was the enactment by Congress of a provision for inspection of signal installations, operations, and maintenance, which will inevitably lead to increased expense.

The gross operating revenues of the Class I railways last year amounted to $4,166,068,000, an increase of 2·8 per cent. over 1936, while operating expenses amounted to $3,119,064,325, an increase of no less than 6·5 per cent. over 1936.

Freight traffic continued to improve during the first nine months of the year, and, despite the setback of the last three months, the total number of cars loaded in 1937 was 37,992,928 compared with 36,062,675 in 1936, an increase of 1,930,253. Passenger traffic also showed further improvement and exceeded that of any year since 1930. Passenger-miles run totalled approximately 24,852,000,000, an increase of 10·8 per cent. compared with 1936, and the resultant revenue advanced by 7·4 per cent.

The handling of this increased traffic necessitated additional equipment, and over 70,000 new freight cars and approximately 700 passenger cars were placed in service during the year. Operating statistics for 1937 show that the average speed of freight trains was the highest on record, while the average freight train load and the average car load each showed improvement over 1936. The purchase of equipment and materials amounted to about $846,000,000, the highest figure since 1930, and the number of railway employees averaged 1,118,000, an increase of nearly 5 per cent. over 1936.

In addition, the railways had to face higher wages scales as a result of agreements reached with two important groups of employees in the latter half of the year, and, moreover, the tax imposed upon the railways under the Social Security Act (enacted to finance unemployment compensation payments) was increased from 1 to 2 per cent. on January 1, 1937, and has been increased to 3 per cent. as from January 1 last.

Notwithstanding this increased expenditure and the discontinuance of the emergency freight rate increase as from the end of 1936, the railways would undoubtedly have improved upon the 1936 result had it not been for the slump during the last quarter of 1937. It was this factor which finally turned the scales against the possibility of further recovery, and the future position is mainly dependent upon the return of general prosperity. Unfortunately, the latest indications are that the recovery in trade and industry expected for the spring of this year has not materialised, with the result that, even after allowance is made for the increase in rates recently authorised, the outlook is far from reassuring. Evidence of the extent to which railway business has fallen is afforded by the returns for the months of January and February last, when the net operating income amounted to only $4,783,395, a rate of return of 0·16 per cent. on property investment, compared with $77,659,615, or 2·58 per cent. for the first two months of 1937. The railroads operated at a loss during February, when the total deficit amounted to $2,136,481 compared with a net income of $38,792,778 in February, 1937.

Forthcoming Meetings

June 17 (*Fri.*).—**British Electric Traction Co. Ltd.** (General), Winchester House, Old Broad Street, E.C.3, at 11.30 a.m.

June 21 (*Tues.*)—**Great Western of Brazil Railway Co. Ltd.** (Ordinary General), River Plate House, Finsbury Circus, E.C.3, at 3.45 p.m.

July 15 (*Fri.*)—**Chemin de fer de Charleroi à la Frontière de France** (Ordinary General), Charleroi, at the company's headquarters (Bureau de l'Exploitation Nord-Belge) at 12.15 p.m.

SIEMENS BROS. & CO. LTD.—A petition by Siemens Bros. & Co. Ltd. for confirmation of an alteration of the company's memorandum of association is directed to be heard by Mr. Justice Simonds at the Royal Courts of Justice on Monday, June 20. A special resolution in favour of the proposed alterations was passed at an extraordinary general meeting of the company on May 20. Extensions of business, arrangements with Governemt and local authorities, amalgamations, guarantees, borrowing powers, promotions, establishment of pension and superannuation funds, &c., are among the objects specified in the proposed alterations.

XUM

RAILWAY AND OTHER MEETINGS

Antofagasta (Chili) & Bolivia Railway Co. Ltd.

The fiftieth annual general meeting of the Antofagasta (Chili) & Bolivia Railway Co. Ltd. was held at Winchester House, Old Broad Street, London, E.C.2, on June 14, Mr. A. W. Bolden, Chairman and Managing Director of the company, presiding.

The Secretary (Mr. C. Cowley) read the notice convening the meeting and the auditors' report.

The Chairman, in moving the adoption of the report and accounts, said that this was the fiftieth ordinary general meeting of the company. Actually, they had not quite reached their jubilee, as the company was incorporated on November 27, 1888. Theirs had been a fairly satisfactory life so far. For more than 40 years they continued to pay dividends on their ordinary capital, and had done a very great deal in opening up Northern Chile and Bolivia with characteristic British enterprise.

In 1937 the company had carried considerably more traffic than during the previous year and had secured an increase in sterling receipts, but this would have been greater had the Bolivian exchange not depreciated again—from 50 to 80 bolivanos to the £. The company had also had to meet higher expenses through salaries and wages and the introduction of new social laws in Bolivia and Chile.

Noteworthy traffic increases had been one of 28 per cent. in passengers in Chile; a rise of from 130,000 to 198,000 tons in nitrate; and a record tonnage of 178,000, against 115,000 for 1936, in copper bars. General merchandise increased by some 22 per cent., and coal and coke by 35 per cent. Working expenses were higher by some 15 per cent. It was unfortunate that in Chile wage increases under the new labour law had been followed by a rise in the cost of living leading to further demands from the workpeople. Similar difficulties occurred in Bolivia.

A letter from a shareholder, Mr. B. Russell, suggested that the company should allocate £389,000 from its reserves to bringing the cumulative preference arrears up to date, and paying a dividend of one per cent. on the ordinary stock; failing that, it was proposed the directors should forgo their fees until such an ordinary dividend was paid. Mr. Russell had been informed that any such resolution by the shareholders could not be effective as the company's articles laid down that no dividend should be payable in excess of what was recommended by the directors. The board could not make any such recommendation bearing in mind its liabilities, the chief of which was the maturity on January 1, 1940, of £1 million of 4½ per cent. debenture stock repayable at 105 per cent., and £1,500,000 of 5 per cent. debenture stock repayable at 110 per cent. The directors had already dealt with the whole of the year's net receipts, and in the last seven years had reduced the carry-forward by £116,000 in pursuance of the policy of distributing whatever was available from earnings and investments while maintaining a sound financial position.

Mr. Russell put his resolution to the meeting, and it was defeated by three votes against an overwhelming majority in favour of the policy of the board.

The report and accounts were adopted with one dissentient.

RAILWAY AND OTHER REPORTS

Assam Railways & Trading Co. Ltd.—The following dividends have been declared for the half-year ending June 30, 1938: On the pre-preference shares at the rate of 8 per cent. per annum, and on the new six per cent. preference shares at the rate of 6 per cent. per annum. Payment will be made on July 4.

Southern San Paulo Railway Co. Ltd.—Credits to revenue account during 1937 amounted to £22,478, compared with £20,744 for the preceding year, an increase of £1,733 which is mainly accounted for by the higher sterling value of Brazilian currency. Revenue charges, including a full year's debenture interest, amounted to £28,499, against £29,171, making a loss for the year of £6,021, compared with £8,426. The debenture stockholders' committee has agreed to an extension of the moratorium to cover 1938. Half-yearly interest payments on January 1 and July 1, 1937, and on January 1, 1938, have been 1½ per cent., instead of 2½ per cent. The unpaid balance of 1 per cent. in respect of these three half-years will bear interest at the rate of 5 per cent. per annum until paid.

Eastern Counties Omnibus Co. Ltd.—The accounts of this company, which is controlled jointly by the L.N.E.R. and L.M.S.R. companies and by Tilling & British Automobile Traction Limited, for the year ended March 31, 1938, show a profit of £71,454 (against £66,027) to which must be added £29,213 brought forward, making a total of £100,667. The preference dividend again takes £10,000, and the directors recommend a dividend on the ordinary shares of 8 per cent. for the year, which will absorb £60,480 and leave £30,187 to be carried forward. For the previous year the ordinary dividend was at the same rate but on a smaller capital. During the year under review the authorised capital has been increased from £900,000 to £1,000,000, and the issued capital increased to £956,000. Several small bus businesses have been acquired during the year.

British Electric Traction Co. Ltd.—Revenue for the year ended March 31, 1938, amounts to £669,404. After deducting £143,454 for general expenses, directors' fees, income tax, and staff endowment fund, and £79,479 for debenture stock interest, there is a profit of £446,471, being an increase of £55,576 compared with the previous year. The directors recommend the payment of the following dividends, less income tax, for the year ended March 31, 1938: 6 per cent. on the participating preference stock (£42,765); 8 per cent. on the preferred ordinary stock (£106,101); and 5 per cent. on the deferred ordinary stock (£32,675), leaving for further appropriation a balance of £264,930. Subject to the proposed dividend on the deferred ordinary stock being approved, the preference stockholders are entitled to receive a further dividend of 2 per cent. (£14,255), less income tax, making 8 per cent. for the year. The directors further recommend that £65,352, equal to 10 per cent. on the deferred ordinary stock, be capitalised and distributed to the deferred ordinary stockholders in fully-paid deferred ordinary shares of £1 each, such shares to be converted subsequently into deferred ordinary stock. After these further appropriations there is a balance of £185,323 to be added to undivided profits account, making that account £1,721,278. The share of the year's profit available for distribution among the deferred ordinary stockholders amounts to £283,351.

Turner & Newall Limited.—An interim dividend is announced of 3¾ per cent., the same as a year ago.

Crompton Parkinson Limited.—An interim dividend is being paid of 6 per cent. on the ordinary and A ordinary shares on account of the year ending September 30, 1938. This is at the same rate as a year ago, but on a capital increased in 1936-37 by two bonuses aggregating 40½ per cent.

Guest Keen & Nettlefolds Limited.—After charging debenture interest amounting to £63,012 and making provision for redemption of debenture stock amounting to £38,255, the profits of the year are £1,225,466 (against £898,728), against which there has been charged an amount of £150,000 as provision for depreciation, leaving £1,075,466. Transferred to investments reserve, £100,000, and £250,000 to the reserve fund. The directors recommend a final dividend on the ordinary stock of 4½ per cent., free of tax, making 7½ per cent., free of tax, for the year (against 6 per cent.).

NOTES AND NEWS

Restoration of Peiping-Nanking Through Service.—A Reuters message from Peiping states that it is hoped to reopen the whole route between these cities for train service by July 1, according to information from Japanese sources. It is expected that the Tientsin–Pukow line will be repaired throughout by then.

High-Speed Electric Traction in Italy.—It is understood that experiments are being made in the operation of a 90-min. schedule with electric traction on the 130½-mile route between Rome and Naples (Mergillina). This compares with the current timing by the fastest electric trains of 1 hr. 49 min. southbound and 1 hr. 52 min. northbound.

Kirkstead Toll Bridge to be Freed.—The Kirkstead (Lincolnshire) toll bridge, spanning the River Witham, and belonging to the L.N.E.R., is shortly to be freed from toll. The Minister of Transport has given his consent to the purchase price of £6,800, and the draft agreement between the county councils concerned and the railway company has been approved.

Launch of the "Swan."—The L.M.S.R. luxury motor vessel *Swan*, built by Vickers-Armstrongs Limited, of Barrow-in-Furness, for service on Lake Windermere was launched at Lakeside on Friday morning last, June 10, by Miss J. Davies, daughter of Mr. Ashton Davies, Chief Commercial Manager, L.M.S.R. The new vessel, which has accommodation for 800 passengers, is the second important addition to the L.M.S.R. Windermere fleet during the past two years.

Unemployment Insurance for Railway Workers.—According to a Reuters message from New York the House of Representatives has passed the Bill creating an unemployment insurance system for railroad workers. This measure is designed to place all railway workers under the Federal Unemployment Insurance Law, instead of leaving them under the State Unemployment Acts. The new system would be financed by a levy of 3 per cent. on pay rolls and an effort will be made to enact the Bill this session.

New London Road for Buses.—The North London tramway conversion, of which we gave brief particulars on page 480 of our issue of March 11 last, included the abandonment of the tramway from Turnpike Lane Underground station *via* Muswell Hill to the Alexandra Palace, which was opened on December 6, 1905. On this route most of the track inside the Palace grounds was laid on sleepers—an unusual feature in the London area—and, therefore, the track was not suitable for use by either trolleybuses or motorbuses. Since then, a reinforced-concrete road, stretching for 1¼ miles through the grounds of the Alexandra Palace, and built specially for the operation of a new motorbus service, has been completed and was opened on May 28, by Mr. Frank Pick, Vice-Chairman of the London Passenger Transport Board. This road, which has cost approximately £15,000, will be maintained by the Alexandra Palace Trustees. The new bus service, which runs between Wood Green station and Finsbury Park, was opened on Wednesday, June 1.

Derailment in Japan.—Two trains, travelling in opposite directions between Kobe and Shimonoseki, were derailed near Kumayama on June 15, as a result of a landslide caused by continuous rains. It is reported that 25 persons were killed and 150 injured.

Entre Rios Railways Co. Ltd.—In accordance with the provisions of the scheme of arrangement approved at a meeting of the holders of 5 per cent. debentures, held on June 18, 1937, the Joint Special Committee representing the Association of Investment Trusts and the British Insurance Association Investment Protection Committee has agreed that the interest moratorium at present in force until July 1, 1938, shall be extended to July 1, 1939, the committee having been satisfied that such extension is necessary and in the interests of the holders of the debentures.

New German Visa Regulations for Holders of British Passports.—In the interests of all who intend travelling to Germany, particulars of the approximate dates of the journeys and of the type of visa desired should be attached to passports presented at the German Embassy. The following important new alterations in the visa regulations are now in force: (1) Two types of visa are issued—(*a*) for a single transit journey, costing 2s., and (*b*) for a double transit journey, costing 3s. 6d. (2) The £1 7s. fee for a 12-months' visa has been abolished. (3) Additional facilities are now available in connection with 3-months' visas. (4) Visas are now required by holders of Newfoundland and Southern Rhodesian passports.

Civil Engineers' Conversazione.—Mr. Sydney B. Donkin, President of the Institution of Civil Engineers, and Miss Mary Donkin, received the guests at the annual conversazione of the institution held at its headquarters, Great George Street, London, S.W.1, on June 15. Many exhibits of engineering interest were on view at the conversazione, among which was a model by Major Husbands of a remarkable road improvement scheme for Charing Cross. The main feature of this was a new low-level road from the Haymarket, dipping down behind the National Gallery, and after passing under the Strand, reaching a new bridge across the Thames just east of the Charing Cross railway bridge, and joining by means of flying junctions the new Waterloo Bridge road near Waterloo station. Other exhibits were concerned with electrical and constructional engineering, and scientific instruments.

Road Accidents.—The Ministry of Transport return for May of persons killed or injured in road accidents is as below. The figures in brackets are those for the corresponding period of last year:—

	Killed	Injured
England—		
Pedestrians ...	160 (209)	4,807 (5,731)
Others... ...	233 (293)	11,895 (14,035)
Wales—		
Pedestrians ...	3 (11)	195 (226)
Others... ...	8 (10)	476 (542)
Scotland—		
Pedestrians ...	24 (23)	646 (688)
Others... ...	17 (38)	986 (1,154)
	445 (584)	19,005 (22,376)

The total fatalities for the preceding month were 508, compared with 463 in the corresponding period of 1937.

Large Beyer-Garratt Locomotives for India.—As recorded in our Contracts and Tenders page in this issue, an order for four Beyer-Garratt locomotives of great size and power, having the 4-8-2 + 2-8-4 wheel arrangement and for the 5 ft. 6 in. gauge, has been placed by the Bengal-Nagpur Railway Administration with Beyer, Peacock & Co. Ltd. The engines will have an approximate total weight of about 230 tons, will develop at 85 per cent. boiler pressure 70,000 lb. of tractive effort, and will have a grate area of 70 sq. ft. The maximum axleload of these engines has been kept down to 17 tons. The equipment will include Thermic syphons and S.K.F. roller bearings.

Coronation Scot Train American Tour.—The American tour to be made next year by the L.M.S.R. Coronation Scot express train will be to the following programme: The train, consisting of streamlined locomotive and eight coaches, will be shipped from England next January, and will enter the United States *via* Baltimore. On arrival it will be assembled in the Baltimore shops of the Baltimore & Ohio Railroad. Prior to exhibition at the World's Fair, New York, at the end of April, the Coronation Scot will make a tour of eight American railroads, visiting 38 cities and towns, and covering in all 3,121 miles. During this tour, the train will travel under its own power throughout and will be manned by an L.M.S.R. crew. Two drivers and two firemen, as well as a fitter, will accompany the train (two crews being necessary for relief purposes). Among the important centres at which the train will be exhibited will be Baltimore, Washington, Philadelphia, Pittsburgh, Cincinnati, Louisville, Indianapolis, St. Louis, Chicago, Detroit, Toledo, Cleveland, Buffalo, Albany, Boston, and New York City. The train will be one of three new train sets to be built in L.M.S.R. works for the Coronation Scot service. Two of these new trains will go into regular service between Euston and Glasgow, and the third will visit the U.S.A. These new trains will be of the articulated type, and will

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represent a still further advance in travel comfort and technical features. The American exhibition train will be made up of the following eight vehicles: corridor first class brake, corridor first class coach, corridor first class lounge, first class diner, kitchen car, third class diner, first class sleeping saloon, and corridor third class brake. The sleeper, which of course is not normally a part of the Coronation Scot, will be included to demonstrate the latest developments of British practice in the design of vehicles for night travel.

Kitchen & Wade Limited.—Mr. Albert Kitchen, Chairman and Managing Director, speaking at the second ordinary general meeting of Kitchen & Wade Limited, said that the net profit of £71,255 had been achieved as the result of ever-increasing efficiency and a considerable increase in the company's turnover. The proportion of Government orders had been little more than normal, and at the moment the company had orders on its books originating from 21 different overseas countries. It had been found necessary to take further works in Halifax to cope with the increasing business, particularly in larger machines. Orders in hand were larger than at this time last year and were still coming in steadily. In the new works the company recently constructed a drilling machine weighing nearly 65 tons.

"The Times" Iron and Steel Number.—A copy of this special supplement to *The Times*, published on June 14, has been sent us by the British Steelwork Association, Steel House, Tothill Street, London, S.W.1. Two illustrated articles in the special number deal with the influence of steel on architectural design and the development of the modern all-steel house. An article on transport by land and sea shows that during 1937 the steel industry contributed 68,630,900 tons to the total railway freight traffic of 297,063,000 tons, made up of iron ore, coal and coke, limestone, pig iron, scrap iron and steel, and semi-finished and finished steel. Steelwork in bridge-building is represented by a survey of recent notable achievements, illustrated with views of the Storström, Oakland Bay, and Birchenough bridges.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 23rd Week			Totals to Date		
	1938	1937	Inc. or Dec.	1938	1937	Inc. or Dec.
	£	£	£	£	£	£
L.M.S.R. (6,852½ mls.)						
Passenger-train traffic...	586,000	518,000	+ 68,000	10,304,000	10,328,000	− 24,000
Merchandise, &c. ...	376,000	516,000	− 140,000	10,840,000	11,253,000	− 413,000
Coal and coke ...	161,000	228,000	− 67,000	6,094,000	6,239,000	− 145,000
Goods-train traffic ...	537,000	744,000	− 207,000	16,934,000	17,492,000	− 558,000
Total receipts	1,123,000	1,262,000	− 139,000	27,238,000	27,820,000	− 582,000
L.N.E.R. (6,315 mls.)						
Passenger-train traffic...	392,000	348,000	+ 44,000	6,689,000	6,778,000	− 89,000
Merchandise, &c. ...	260,000	346,000	− 86,000	7,561,000	7,776,000	− 215,000
Coal and coke ...	182,000	234,000	− 52,000	5,766,000	5,864,000	− 98,000
Goods-train traffic ...	442,000	580,000	− 138,000	13,327,000	13,640,000	− 313,000
Total receipts	834,000	928,000	− 94,000	20,016,000	20,418,000	− 402,000
G.W.R. (3,737 mls.)						
Passenger-train traffic...	233,000	222,000	+ 11,000	4,295,000	4,333,000	− 38,000
Merchandise, &c. ...	142,000	211,000	− 69,000	4,393,000	4,514,000	− 121,000
Coal and coke ...	71,000	112,000	− 41,000	2,593,000	2,624,000	− 31,000
Goods-train traffic ...	213,000	323,000	− 110,000	6,986,000	7,138,000	− 152,000
Total receipts	446,000	545,000	− 99,000	11,281,000	11,471,000	− 190,000
S.R. (2,148 mls.)						
Passenger-train traffic...	373,000	342,000	+ 31,000	6,658,000	6,683,000	− 25,000
Merchandise, &c. ...	51,500	64,500	− 13,000	1,377,000	1,401,500	− 24,500
Coal and coke ...	18,500	27,500	− 9,000	725,000	748,500	− 23,500
Goods-train traffic ...	70,000	92,000	− 22,000	2,102,000	2,150,000	− 48,000
Total receipts	443,000	434,000	+ 9,000	8,760,000	8,833,000	− 73,000
Liverpool Overhead ... (6½ mls.)	1,535	1,363	+ 172	30,863	27,915	+ 2,948
Mersey (4½ mls.) ...	4,335	3,905	+ 430	100,369	96,571	+ 3,798
*London Passenger Transport Board ...	609,900	579,500	+ 30,400	28,227,700	27,600,800	+ 626,900
IRELAND						
Belfast & C.D. pass. (80 mls.)	2,521	2,697	− 176	43,580	45,760	− 2,180
,, ,, goods	394	452	− 58	9,945	11,378	− 1,433
,, ,, total	2,915	3,149	− 234	53,525	57,138	− 3,613
Great Northern pass. (543 mls.)	11,850	10,000	+ 1,850	203,550	202,300	+ 1,250
,, ,, goods	8,000	8,550	− 550	200,750	219,100	− 18,350
,, ,, total	19,850	18,550	+ 1,300	404,300	421,400	− 17,100
Great Southern pass. (2,076 mls.)	39,669	35,319	+ 4,350	700,472	688,151	+ 12,321
,, ,, goods	32,895	37,225	− 4,330	903,919	964,386	− 60,467
,, ,, total	72,564	72,544	+ 20	1,604,391	1,652,537	− 48,146

* 50th week (before pooling) Whitsun Monday, 1938

British and Irish Railway Stocks and Shares

Stocks	Highest 1937	Lowest 1937	Prices June 15, 1938	Prices Rise, Fall
G.W.R.				
Cons. Ord. ...	67⅝	55¾	46¼	−1¼
5% Con. Prefce. ...	127	108	109½	−2
5% Red.Pref.(1950)	113	109	109½	—
4% Deb.	113⅝	102½	108	—
4½% Deb.... ...	118	106	111½	—
4½% Deb.	124½	112	117½	—
5% Deb.	136½	122¾	129½	—
2½% Deb.... ...	76	64	68½	—
5% Rt. Charge ...	133 7/16	118	127½	—
5% Cons. Guar. ...	133¾	116½	125½	—
L.M.S.R.				
Ord.	36⅛	25⅜	16	−½
4% Prefce. (1923)	82½	65¾	45	−1½
4% Prefce. ...	92½	77¾	63	−1½
5% Red.Pref.(1955)	107¾	102	92½*	−1
4% Deb.	108	99¼	100*	—
5% Red.Deb.(1952)	117½	111	111½	—
4% Guar. ...	104	95⅞	96	−½
L.N.E.R.				
5% Pref. Ord. ...	12½	6¾	4¾	—
Def. Ord.	6¼	3⅝	2¾	—
4% First Prefce.	79½	63	43	−1½
4% Second Prefce.	31½	21	14	−1
5% Red.Pref.(1955)	101¼	89¾	74½	−5
4% First Guar. ...	103	91⅞	86	−2½
4% Second Guar.	97⅝	85½	76½	−1
3% Deb.	84⅛	74	74*	—
4% Deb.	107¼	98½	99*	—
5% Red.Deb.(1947)	113½	106½	109½	—
4½% Sinking Fund Red. Deb.	110 5/16	105½	106*	—
SOUTHERN				
Pref. Ord.... ...	98⅝	83½	65	−2
Def. Ord.	27⅞	16¾	17	−½
5% Pref.	126 1/16	105 13/16	106½	−2
5% Red.Pref.(1964)	118	110¼	113½	—
5% Guar. Prefce.	133¾	116¾	125½	—
5% Red.Guar.Pref. (1957)	118½	111½	115	—
4% Deb.	112	101¼	104*	—
5% Deb.	135¾	123½	125½*	—
4% Red. Deb. 1962–67	113	105	106½*	—
BELFAST & C.D.				
Ord.	5	4	4	—
FORTH BRIDGE				
4% Deb.	106	99½	100½	—
4% Guar. ...	105¾	99	101½	—
G. NORTHERN (IRELAND)				
Ord.	11	5	4⅝	—
G. SOUTHERN (IRELAND)				
Ord.	50	21½	20	—
Prefce.	61	34	20	—
Guar.	94¾	69½	59½	—
Deb.	95	82⅛	73	−2
L.P.T.B.				
4½% "A" ...	123¾	110½	116	—
5% "A" ...	135	121½	125½	—
4½% "T.F.A." ...	108¾	104	106*	—
5% "B" ...	125	114½	116½	—
"C"	99¾	75	74	−1
MERSEY				
Ord.	42⅜	22	19	—
4% Perp. Deb. ...	103	96¾	100	—
3% Perp. Deb. ...	77⅝	74½	74½	—
3% Perp. Prefce.	68¾	61¼	64	—

* ex-dividend

OFFICIAL NOTICES

WORKS MANAGER (young) required for important British-owned Railway in Argentina, to take charge of large workshops dealing with considerable numbers of locomotives and rolling stock and employing several thousands of workmen. Salary about £1,500, rising to £2,000 per annum, on contract, with first class passages and leave with full pay after fixed period of satisfactory service. Apply, in confidence, giving detailed particulars of education, training, and experience, with copies (only) of testimonials, and stating age and if single or married to: Box "V.G.," c/o 95, Bishopsgate, London, E.C.2.

Crown Agents for the Colonies

COLONIAL GOVERNMENT APPOINTMENTS.

APPLICATIONS from qualified candidates are invited for the following post:—

SENIOR TRAFFIC INSPECTOR required by the Government of Hong Kong for the Railway Department for three years, with possible permanency. Salary £300—£15—£430 a year. Free passages and quarters, or an allowance in lieu, and leave on full salary. Candidates, unmarried, and age 23-28, must possess a sound knowledge of the various phases of traffic working on an English or Colonial Railway, particularly Block Telegraph operation on single lines, Guards' Rosters, and general train working. Good experience in the control and supervision of staff is desirable.

Apply at once by letter, stating age, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4, Millbank, London, S.W.1, quoting M/5778.

CONTRACTS AND TENDERS

New Design Large Beyer-Garratts for India

Beyer, Peacock & Co. Ltd. has received an order from the Bengal-Nagpur Railway Administration for four Beyer-Garratt locomotives of new design for the 5 ft. 6 in.-gauge. These locomotives, which are of great size and power, will have the 4-8-2 + 2-8-4 wheel arrangement. They are intended for branch line work and for negotiating curves of 573 ft. radius. The maximum axleload will be 17 tons and the approximate total weight about 230 tons. The engines will be fitted with Thermic syphons, and S.K.F. roller bearings on all of the bogie and carrying wheels. The tractive effort at 85 per cent. will be 70,000 lb. and the firebox will have a grate area of 70 sq. ft. The engines are to be supplied under the supervision and inspection of Sir John Wolfe Barry & Partners.

Diesel Locomotive for Ceylon

Hunslet Engine Co. Ltd. has received an order from the Crown Agents for the Colonies for one 30-h.p. diesel locomotive for service in Ceylon.

The Skoda Works have received an order from the Egyptian State Railways Administration for axles (Ref. No. E.S.R. 21.787, total cost £380, delivery f.o.b. Hamburg or Trieste).

Arthur Balfour & Co. Ltd. has received an order from the Egyptian State Railways Administration for steel files (Ref. No. E.S.R. 9.90, total cost £354, delivery f.o.b. London, Liverpool, or Manchester).

George Salter & Co. Ltd. has received an order from the Egyptian State Railways Administration for springs (Ref. No. E.S.R. 21,801, total price £512, delivery f.o.b. English port).

Hackethal Draht und Kabelwerk has received an order from the Egyptian State Railways Administration for the supply of underground cable (adjudication April 4, total cost £1,060, delivery f.o.b. Bremen).

The Egyptian State Railways Administration has placed orders for machine tools as follow:—

Ormerod Shapers Limited: Five shaping machines (total cost £1,962, f.o.b. Liverpool).

Morrisson, Marshall & Hill: (adjudication March 5, total cost £2,859, f.o.b. Liverpool).

J. Lang & Sons: (adjudication March 10, total cost £5,165, f.o.b. Glasgow).

H. W. Ward & Co.: (adjudication March 26, total cost £1,587, f.o.b.).

Cincinnati Milling Machine Limited: (adjudication April 5, total cost £1,193, f.o.b. London).

W. G. Bagnall Limited has received an order from the Bengal North Western Railway for six superheated boilers for F class locomotives to be supplied to the inspection of Messrs. Rendel, Palmer & Tritton.

Rolling Stock Orders for Africa and Iraq

Metropolitan-Cammell Carriage & Wagon Co. Ltd. has received orders from the Crown Agents for the Colonies for two bogie third-class and brake coaches and one bogie inspection saloon required for the Gold Coast Government Railway.

Metropolitan-Cammell Carriage & Wagon Co. Ltd. has also received an order from the Crown Agents for the Colonies for 45 bogie covered goods wagons, metre-gauge, for the Iraq State Railways.

Gloucester Railway Carriage & Wagon Co. Ltd. has received an order from the Crown Agents for the Colonies for 13 20-ton bogie covered goods wagons required for the Gold Coast Government Railway.

The Sudan Railways Administration has placed orders with the Metropolitan-Cammell Carriage & Wagon Co., Ltd., for 75 30-ton bogie covered goods wagons, and with Hurst Nelson & Co., Ltd., for 50 15-ton four-wheeled covered goods wagons.

D. Wickham & Co. Ltd. has received an order from the Crown Agents for the Colonies for two petrol-driven rail inspection trolleys required for the Jamaica Government Railway.

Uddeholms General Agency has received an order from the South Indian Railway Administration, to the inspection of Messrs. Robert White & Partners, for 500 solid drawn steel boiler tubes and 144 solid drawn steel smoke tubes.

The Bengal-Nagpur Railway Administration has placed orders with Miller & Co. and with Coultness Iron Co. Ltd. each for 100 cast-iron wheels.

The Vulcan Foundry Limited has received orders from the Bengal-Nagpur Railway Administration for engine wheels and axles.

J. O'Hara Murray (India) & Co. Ltd. has received an order from the Indian Stores Department for 500 cylindrical buffers complete for four-wheeled stock.

Samuel Osborn (India) Limited has received an order from the Indian Stores Department for 600 buffer plungers for bogie stock.

Motovapore S.A. has received orders from the Roumanian State Railways Administration for Caprotti valve-gear required for 10 engines of the "142" type; these are additional to 11 equipments ordered early in 1937 for type "P8" locomotives and follow the good results obtained with these engines. The Roumanian "142" type locomotives are similar to the original Austrian 2-8-4 type locomotives of the "214" class built in Roumania, but will be oil-fired and have the Caprotti valve-gear.

Beruck & Comens (Engineers) Limited has received orders from the Indian Stores Department for ten sets of 1 in 8½ crossings with single slips and twelve 1 in 8½ crossings with double slips.

R. Wright & Partners Limited has received orders from the Indian Stores Department for five sets of 1 in 12 turnouts and 55 sets of 1 in 8½ turnouts.

The Singh Engineering Works has received an order from the Indian Stores Department for 200,000 mild-steel split cotters for cast-iron sleepers.

A. C. Bottomley & Co. has received an order from the Indian Stores Department for one oil-fired furnace electrically operated, complete.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department, Simla, receivable by July 4, for the supply of iron and steel sections required for the E.I., E.B., G.I.P., and N.W. Railways.

The Bombay, Baroda & Central India Railway Administration invites tenders, receivable at the White Mansion, 91, Petty France, Westminster, S.W.1, by June 29, for the supply of copper firebox plates; and, receivable by July 13, for the supply of carriage and wagon axles, locomotive and tender axles, forged steel buffers and parts for locomotives, carriages and wagons, steel boiler, flue and arch tubes, carriage and wagon tyres, and helical and volute springs.

Clensol Limited, the proprietor of the Clensol chemical descaling solution, has received increased business lately, in connection with the cleaning of fire hydrant mains arising out of the tightening up of local government regulations under air raid precaution schemes. A main reduced by scale from 2½ in. to barely ¾ in. bore was circulated with Clensol solution and after 16 hours was found to be clean to the metal.

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Railway Share Market

The general position in the stock and share markets has again been influenced by the small amount of business in evidence and the tendency was moderately reactionary. Home railway stocks reflected the surrounding trend, but were steadier than might have been expected following publication of the past week's traffics, which show an aggregate decrease of £323,000 and were disappointing with the exception of the Southern figures. The latter disclose an increase of £9,000, and it is hoped that this railway's receipts will improve during the next few months as the line is essentially passenger carrying and, therefore, usually enjoys its best period at this time of the year.

The belief is gaining ground that at current levels the junior stocks of the main line railways more than discount the reduced receipts shown in the current year to date. Nevertheless, the disposition is to await the half-yearly statements, and it is realised that traffic receipts are unlikely to make a satisfactory showing unless there is expansion of general trade activity. On the other hand, even if traffics were to show little improvement during the next six months, there seems reason to believe that the dividends of the junior preference stocks of the L.M.S.R. and also that of L.N.E.R. first preference would be covered. Consequently it is being assumed that these stocks have probably been reduced unduly in price.

L.M.S.R. ordinary was dull at 16 under the influence of the £139,000 traffic decrease for the past week. L.N.E.R. second preference has been obtainable at 14¼ and the first preference at 43. Southern preferred was fairly steady around 65, as was the deferred at 16¾. London Transport "C" was moderately reactionary and has declined to 73¾. The marked fall in stocks of the junior class which has been shown this year is, of course, a reflection of the decline in trade activity, which was unforeseen at the time of the annual meetings, when the remarks as to prospects, although cautious, were reasonably encouraging. Debenture and prior charge stocks generally had a rather easier tendency this week, but this was due to the trend in Government securities with which, in common with other front rank investments, they usually move in sympathy.

Argentine railway stock attracted less attention now it has become generally recognised that there is not the slightest prospect of nationalisation or proposals of a similar kind being seriously considered in the more immediate future. The lower prices now ruling for the stocks of B.A. Great Southern, Central Argentine and B.A. Western reflect profit-taking following the improved quotation made last week. Antofagasta was lower after the meeting.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1937–38	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1937	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1937	Prices: Lowest 1937	Prices: June 15, 1938	Prices: Yield % (See Note)
				£	£		£	£	£					
South & Central America	Antofagasta (Chili) & Bolivia	834	12 6 38	10,940	– 3,340	24	389,490	396,610	– 7,120	Ord. Stk.	29	10¼	9½	Nil
	Argentine North Eastern	753	11.6.38	11,861	+ 1,700	50	461,364	442,523	+ 18,841	,,	19¼	6	6	Nil
	Argentine Transandine	—	—	—	—	—	—	—	—	A. Deb.	93½	60	90§	47.6
	Bolivar	174	May, 1938	3,450	– 2,650	22	19,050	29,300	– 10,250	6 p.c. Deb.	9½	5	8½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	17	9	5	10
	Buenos Ayres & Pacific	2,806	11.6.38	79,653	– 25,930	50	4,404,101	4,821,135	– 417,034	Ord. Stk.	17⅛	5½	5	Nil
	Buenos Ayres Central	190	4.6.38	$116,700	– $56,100	49	$5,568,400	$6,844,600	– $1,276,200	Mt. Deb.	111½	18	11½	Nil
	Buenos Ayres Gt. Southern	5,084	11.6.38	127,047	+ 5 893	50	7,410,109	7,427,500	– 17,391	Ord. Stk.	33¾	13½	12	Nil
	Buenos Ayres Western	1,930	11.6.38	36,290	– 8 561	50	2,246,650	2 497,287	– 250,637	,,	31¾	11¼	8	Nil
	Central Argentine	3,700	11.6.38	101,573	– 50,651	50	5,937,380	7,673,597	– 1,736,217	,,	34¼	10¾	8½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	20½	4½	4	Nil
	Cent. Uruguay of M. Video	972	4.6.38	21,174	– 231	49	904,522	877,713	+ 26,809	Ord. Stk.	67/32	2	2	Nil
	Cordoba Central	1,218	—	—	—	—	—	—	—	Ord. Inc.	6¼	1½	3	Nil
	Costa Rica	188	Apr., 1938	27,588	+ 6,911	44	260,926	192,328	+ 68,598	Stk.	38	27	26½	79/8
	Dorada	70	May, 1938	18,300	+ 4,300	22	79,200	76,400	+ 2,800	1 Mt. Db.	107	106	106	55/8
	Entre Rios	810	11.6.38	15,490	+ 2,202	50	714 389	643,763	+ 70 626	Ord. Stk.	19 7/16	6	5½	Nil
	Great Western of Brazil	1,092	11 6.38	5,100	– 1,490	24	168,600	179,900	– 11,300	Ord. Sh.	¾	⅛	¼	Nil
	International of Cl. Amer.	794	Apr., 1938	$523,864	– $37,036	18	$2,056,786	$2,181,008	– $124,222	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	Ist Pref.	2/	1/–	½	Nil
	La Guaira & Caracas	22¼	May, 1938	5,905	+ 650	22	25 635	28,335	– 2,700	Stk.	8½	6	8½	Nil
	Leopoldina	1,918	11.6.38	17,256	– 4,251	24	425 113	519,958	– 94.845	Ord. Stk.	9¼	3	2	Nil
	Mexican	483	7.6.38	$265,300	+ $12 000	23	$6,953 900	$7,059,900	– $106,000	,,	1½	¼	3/16	Nil
	Midland of Uruguay	319	Apr., 1938	9,614	+ 888	44	95,899	87,736	+ 8,163	,,	1⅞	½	½	Nil
	Nitrate	386	31.5.38	4,001	+ 271	22	73.026	74,705	– 1,679	Ord. Sh.	3 1/16	2	1⅞	56/16
	Paraguay Central	274	4.6.38	$5,379,000	+ $1,116,000	49	$158,932,000	$147,320,000	+ $11,612,000	Pr. Li. Stk.	84	79¼	62½	95/8
	Peruvian Corporation	1,059	May, 1938	68,538	– 11,718	48	879,402	908,145	– 28.743	Pref.	14⅝	4½	2½	Nil
	Salvador	100	4.6.38	¢14,300	– ¢2,600	49	¢956,795	¢1,179,358	– ¢222,563	Pr. Li. Db.	23½	21½	22½	Nil
	San Paulo	153½	5.6.38	37,825	– 158	23	696,747	717,902	– 21,155	Ord. Stk.	98½	56	39	10¼
	Taltal	160	May, 1938	1,820	– 1,490	48	36,805	37,920	– 1,115	Ord. Sh.	1 7/16	1 1/16	⅝	13⅝/16
	United of Havana	1,353	11.6.38	18,614	– 1,424	50	1,221,248	1,352,273	– 131,025	Ord. Stk.	5⅝	5 1/32	2	Nil
	Uruguay Northern	73	Apr., 1938	1,002	+ 161	44	9.462	10,134	– 672	Deb. Stk.	10	2	2	Nil
Canada	Canadian National	23,781	7.6.38	627,548	– 118,878	23	14,439,012	16,527,309	– 2,088,297	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	—	4 p.c.	—	—	—	—
	Grand Trunk	—	—	—	—	—	—	—	—	Perp. Dbs.	77	62½	62½§	6⅜
	Canadian Pacific	17,186	7.6.38	456,000	– 59,000	23	10,684,400	11 589,200	– 904,800	4 p.c. Gar.	101⅞	94½	102½	3⅞
										Ord. Stk.	18	7¼	5½	Nil
India†	Assam Bengal	1,329	20.5.38	37,537	+ 3,209	7	181,830	177,225	+ 4,605	Ord. Stk.	86	73½	79	3 5/16
	Barsi Light	202	20.5.38	3,832	+ 870	7	21.495	19.230	+ 2,265	Ord. Sh.	66½	46	60	8 5/16
	Bengal & North Western	2,116	31.5.38	95,425	– 7,324	9	54 0.074	578,466	– 38.392	Ord. Stk.	317	301	297½	6 3/16
	Bengal Dooars & Extension	161	31.5.38	3,647	+ 251	9	20 724	19,674	+ 1,048	,,	100	84	85½	7
	Bengal-Nagpur	3,268	31.5.38	227,775	– 10,602	9	1,227,450	1,275,032	– 47,582	,,	101	89	90½§	4 7/16
	Bombay, Baroda & Cl. India	3,072	10 6 38	253,575	– 12 825	10	1,951,725	1,995,825	– 44,100	,,	113	110½	110½	5 7/16
	Madras & Southern Mahratta	2,967	20.5.38	166,875	+ 7.310	7	819,000	802,998	+ 16,002	,,	110	105	107	8 7/16
	Rohilkund & Kumaon	571	31.5.38	19,104	+ 1,210	9	110,672	113,932	– 3,260	,,	314	302	304½	5 15/16
	South Indian	2,531¾	20.5.38	123,064	+ 5,330	7	589,093	594,375	– 5,282	,,	103½	99½	101 1/8§	4 11/16
Various	Beira-Umtali	204	Apr., 1938	80 038	– 2,647	31	608,683	501,230	+ 107,456	—	—	—	—	—
	Egyptian Delta	620	20.5.38	5,314	– 234	7	28,348	28,631	– 283	Prf. Sh.	31/–	¾	¾	Nil
	Kenya & Uganda	1,625	May, 1938	219,888	+ 5,337	22	1,281,351	1,336,076	– 54 725	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb	48⅛	43½	43	8 1/3
	Midland of W. Australia	277	Apr., 1938	16,585	+ 3.533	44	147,590	132,650	+ 14,940	Inc. Deb.	98	93½	93½§	4 1/4
	Nigerian	1,900	23.4.38	34 709	– 33,375	4	109,004	255,443	– 146,439	—	—	—	—	—
	Rhodesia	2,442	Apr., 1938	394,424	– 16,169	31	2,906,452	2,520,488	+ 385,964	—	—	—	—	—
	South Africa	13,263	21.5.38	601,936	– 25,428	8	4,435,684	4,497 751	– 62 067	—	—	—	—	—
	Victoria	4,774	Mar , 1938	902,439	– 25,935	39	7,294,911	7,634,217	– 339,306	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of ⅛

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements are based on the current rates of exchange and not on the par value